RADIOTONE®

Service Manual

TV-2161VT

de Luxe

RECOMMENDATION FOR SERVICE REPAIRS

1- Use only original spare parts. Only use components with the same specifications for replacement.
2- Original fuse value only should be used.
3- Main leads and connecting leads should be checked for external damage before connection. Check the insulation.
4- Parts contributing to the safety of the product must not be damaged or obviously unsuitable. This is valid especially for insulators and insulating parts.
5- Thermally loaded solder pads are to be sucked off and re-soldered.
6- Ensure that the ventilation slots are not obstructed.
7- Potentials as high as 25 KV are present when this receiver is operating. Operation of the receiver outside the cabinet or with back cover removed involve a shock hazard from the receiver.
   Servicing should not be attempted by anyone who is not thoroughly familiar with the precautions necessary when working on high voltage equipment.
   Perfectly discharge the high potential of the picture tube before handling the tube. The picture tube is highly evacuated and if broken.
   Glass frogments will be violently expelled.
   Always discharge the picture tube anode to the receiver chassis to keep of the shock hazard before removing the anode cap.
8- Keep wire away from the high voltage or high temperature components.
9- When replacing a wattage resistor in circuit board, keep the resistor 10 mm away from circuit board.

HANDLING OF MOS CHIP COMPONENTS

Mos circuit requires special attention with regard to static charges. Static charges may occur with any highly insulating plastics and can be transferred to persons wearing clothes and shoes made of synthetic materials. Protective circuits on the inputs and outputs of mos circuits give protection to a limited extend only due to time of reaction.

Please observe the following instructions to protect the components against damage from static charges.

1- Keep mos components in conductive package until they are used. Most components must never be stored in styropor materials or plastic magazines.
2- Persons have to rid themselves of electrostatic charges by touching mos components.
3- Hold the component by the body touching the terminals.
4- Use only grounded instruments for testing and processing purposes.
5- Remove or connect mos ics when operating voltage is disconnected.

X-RAY RADIATION PRECAUTION

1- Excessive high voltage can be produce potentially hazardous X-RAY radiation. To avoid such hazard, the high voltage must not be above the specified limit. The nominal value of the high voltage of this receiver is 25KV at zero beam current (minimum brightness) under 220V AC power source. The high voltage must not under any circumstance, exceed 30KV. It is recommended the reading of the high voltage be recorded as a part of the service record. It is important to use an accurate and reliable high voltage meter.
2- The primary source of X-RAY radiation in this TV receiver is the picture tube. For continued X-RAY radiation protection, the replacement tube must be exactly the same type tube as specified in the part list.

SERVICING ADJUSTMENTS AND ALIGNMENTS

HIGH VOLTAGE TEST

There is no high voltage adjustment component on the chassis. Changing of +120 depends on the supply voltage. If high voltage is to measured.

1- Connect the + probe of high voltage tester to the anode of cpt.
2- Adjust contrast and brightness to minimum.
3- Measure the high voltage as 23.0+5%KVdc for 14". That voltage is 25. 5±5%KVdc KV for 20" (51 cm) screen size.
4- For maximum brightness, high voltage regulation should be 2KVdc max.

AGC ADJUSTMENT

1- Apply Philips pattern signal which is 60 dB uV amplitude (1V) to the rf input.
2- Adjust VR182 until find a picture without snowy.

VERTICAL ADJUSTMENT

1- Apply Philips pattern.
2- Cut down vertical amplitude with VR576.
3- Center picture with three position key.
4- Make vertical adjustment with VR576 that will see lower and top lines of picture.

HORIZONTAL ADJUSTMENT

1- Apply Philips pattern signal.
2- Center the picture while shifting to right and left with VR181.

STEREO/DUAL ADJUSTMENT

1- Connect oscilloscope 14 pin out of IC901 (TDA9840)
2- Apply one channel signal with stereo publication.
3- Adjust sound signal of 1KHz and 3KHz by means of VR326 that the difference between should be minimum.

TELETEXT ADJUSTMENT

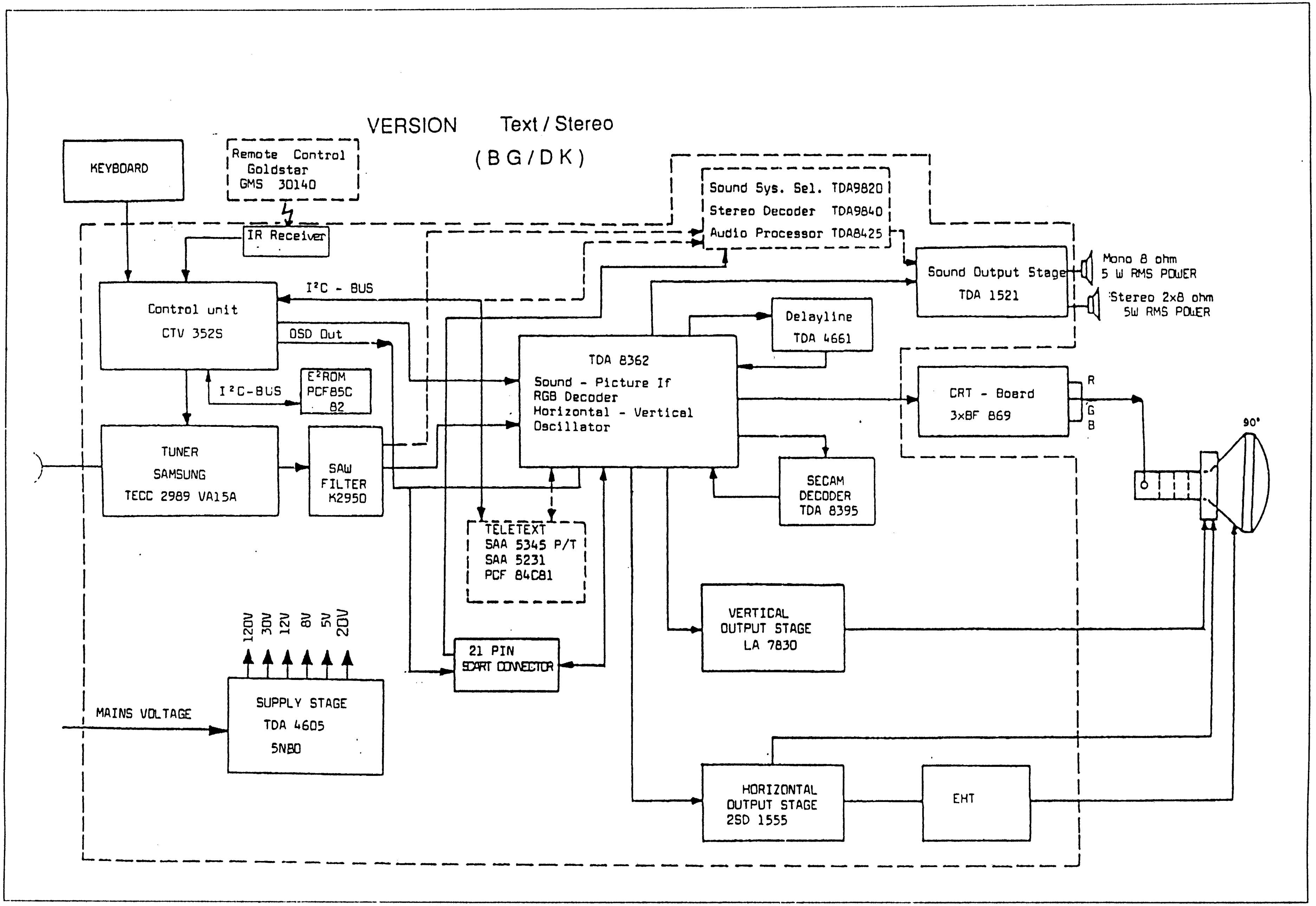
1- Apply one channel signal with teletext publication.
2- Cut video signal which gone IC730.
3- Stop horizontal shifting of picture with VC 726.
4- Again connect video signal to IC730 and check picture.

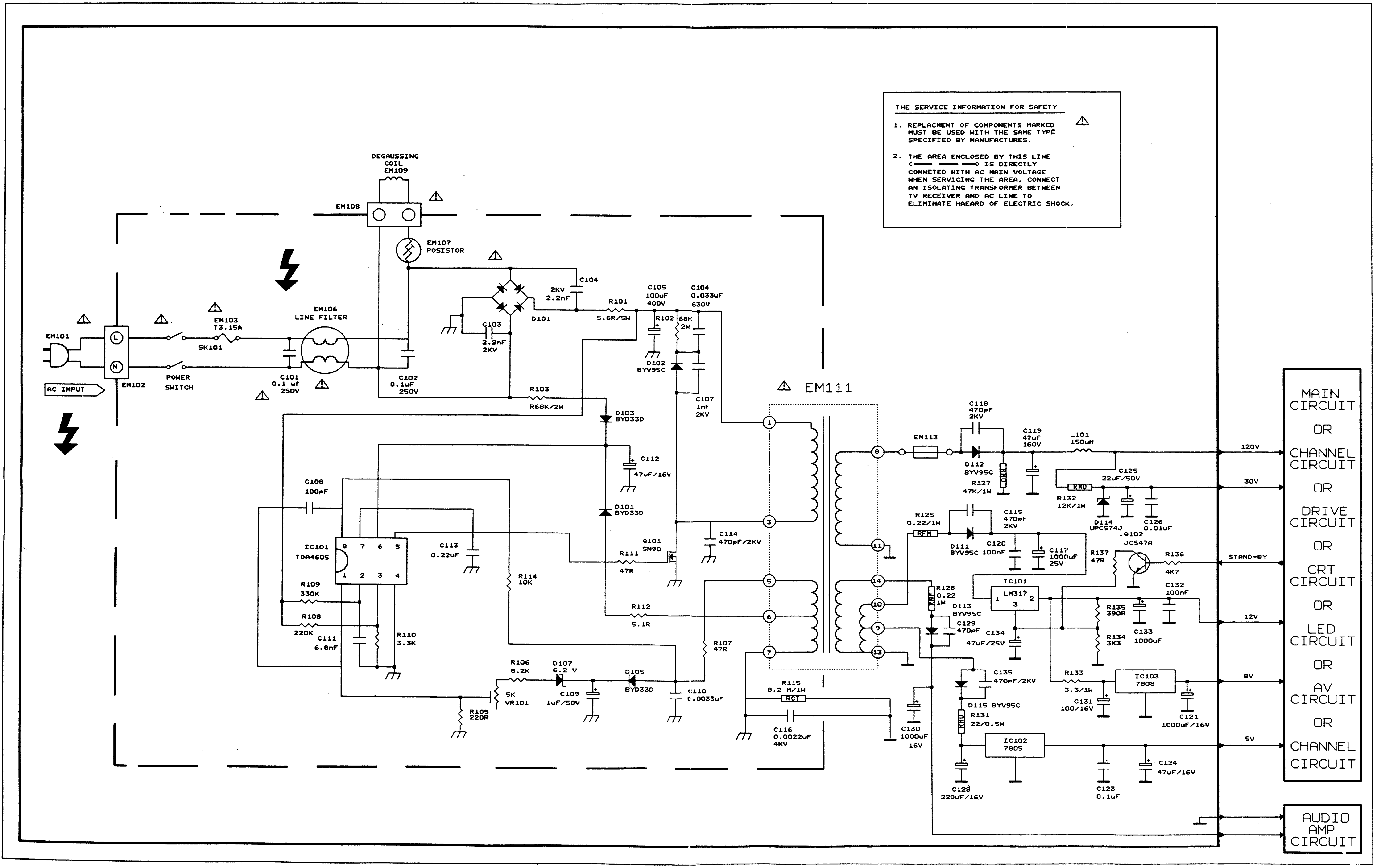
ADJUSTMENT OF SUPPLY VOLTAGE

1- Apply Philips pattern signal.
2- Make the volume, brightness and contrast adjustment to minimum.
3- Adjust the supply voltage on the pin cathode of D112 as Vsys=120±0.5 by using VR101.

VERSION Text / Stereo

(B G / D K)


KEYBOARD
Remote Control Goldstar GMS 30140
IR Receiver
Control unit CTV 3525
I²C - BUS
OSD Out
E²ROM PCF85C 82
I²C-BUS
TUNER SAMSUNG TECC 2989 VA15A
SAW FILTER K2950
TDA 8362
Sound - Picture If
RGB Decoder
Horizontal - Vertical
Oscillator
Sound Sys. Sel. TDA9820
Stereo Decoder TDA9840
Audio Processor TDA8425
Sound Output Stage TDA 1521
Mono 8 ohm 5 W RMS POWER
Stereo 2x8 ohm 5W RMS POWER
Delayline TDA 4661
CRT - Board 3xBF 869
R
G
B
90°
SECAM DECODER TDA 8395
TELETEXT SAA 5345 P/T SAA 5231 PCF 84C81
21 PIN SCART CONNECTOR
VERTICAL OUTPUT STAGE LA 7830
HORIZONTAL OUTPUT STAGE 2SD 1555
EHT
120V
30V
12V
8V
5V
20V
SUPPLY STAGE TDA 4605 5NBO
MAINS VOLTAGE


EM101
AC INPUT
EM102
L
N
POWER SWITCH
SK101
EM103
T3.15A
EM106
LINE FILTER
C101
0.1 uf
250V
C102
0.1uF
250V
DEGAUSSING COIL EM109
EM108
EM107
POSISTOR
C104
2KV
2.2nF
C103
2.2nF
2KV
D101
R101
5.6R/5W
C105
100uF
400V
C104
0.033uF
630V
R102
68K
2W
D102
BYV95C
C107
1nF
2KV
R103
R68K/2W
D103
BYD33D
C112
47uF/16V
D101
BYD33D
C114
470pF/2KV
Q101
5N90
R111
47R
R112
5.1R
C108
100pF
IC101
TDA4605
8 7 6 5
1 2 3 4
C113
0.22uF
R114
10K
R109
330K
R108
220K
C111
6.8nF
R110
3.3K
R106
8.2K
D107
6.2 V
D105
BYD33D
5K
VR101
R105
220R
C109
1uF/50V
C110
0.0033uF
R107
47R
R115
8.2 M/1W
RCT
C116
0.0022uF
4KV
EM111
1
3
5
6
7
8
11
14
10
9
13
EM113
C118
470pF
2KV
D112
BYV95C
R127
47K/1W
C119
47uF
160V
L101
150uH
C125
22uF/50V
R132
12K/1W
D114
UPC574J
C126
0.01uF
R125
0.22/1W
RFM
C115
470pF
2KV
D111
BYV95C
C120
100nF
C117
1000uF
25V
Q102
JC547A
R137
47R
R136
4K7
IC101
LM317
1 2 3
C132
100nF
R128
0.22
1W
D113
BYV95C
C129
470pF
C134
47uF/25V
R135
390R
R134
3K3
C133
1000uF
C135
470pF/2KV
D115 BYV95C
R131
22/0.5W
R133
3.3/1W
C131
100/16V
IC103
7808
C121
1000uF/16V
C130
1000uF
16V
IC102
7805
C128
220uF/16V
C123
0.1uF
C124
47uF/16V
120V
30V
STAND-BY
12V
8V
5V
MAIN CIRCUIT
OR
CHANNEL CIRCUIT
OR
DRIVE CIRCUIT
OR
CRT CIRCUIT
OR
LED CIRCUIT
OR
AV CIRCUIT
OR
CHANNEL CIRCUIT
AUDIO AMP CIRCUIT

THE SERVICE INFORMATION FOR SAFETY

1. REPLACMENT OF COMPONENTS MARKED ⚠ MUST BE USED WITH THE SAME TYPE SPECIFIED BY MANUFACTURES.

2. THE AREA ENCLOSED BY THIS LINE ⟵ — — ⟶ IS DIRECTLY CONNETED WITH AC MAIN VOLTAGE WHEN SERVICING THE AREA, CONNECT AN ISOLATING TRANSFORMER BETWEEN TV RECEIVER AND AC LINE TO ELIMINATE HAEARD OF ELECTRIC SHOCK.

POWER CIRCUIT

SWITCHED MODE POWER SUPPLY STAGE

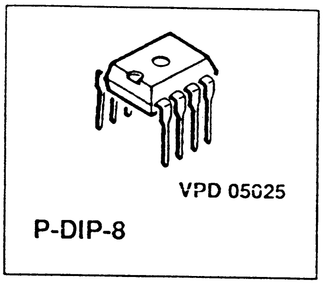
(IC101) TDA4605 and 5N90 mos transistor are used in SMPS circuit. The circuit operates between 165 and 265 V AC (50 Hz) C101, EM106, C102 filter circuit prevents the network noises and the effects of high frequency which is produced in TV set. After rectifying DC voltage is filtered by using C105. The start-up voltage of TDA4605 is obtained from R103 at the same a square wave is produced from pin 5 of IC (TDA4605). This square wave reaches Q101 passing through R111. After that Q101 from and induction on EM111, which produces a voltage on pin 6. This voltage rectified by D101 is used as supply voltage of IC101. IC101 does not operates SMPS by stopping pulses at pin 5 when the network is higher or lower than fixed limits. Pin 2 is control input of overload. If secondary is overload. SMPS is not operated by pin 2.

TDA 4605

Control IC for Switched-Mode Power Supplies using MOS Transistors (IC 101)

FEATURES

- Fold-back characteristic provides overload protection for external components
- Burst operation under short-circuit conditions
- Loop error protection
- Switch-off if line voltage is too low (undervoltage switch-off)
- Line voltage compensation of overload point
- Soft-start for quiet start-up
- Chip over-temperature protection (thermal shutdown)
- On-chip parasitic transformer oscillation suppression circuitry

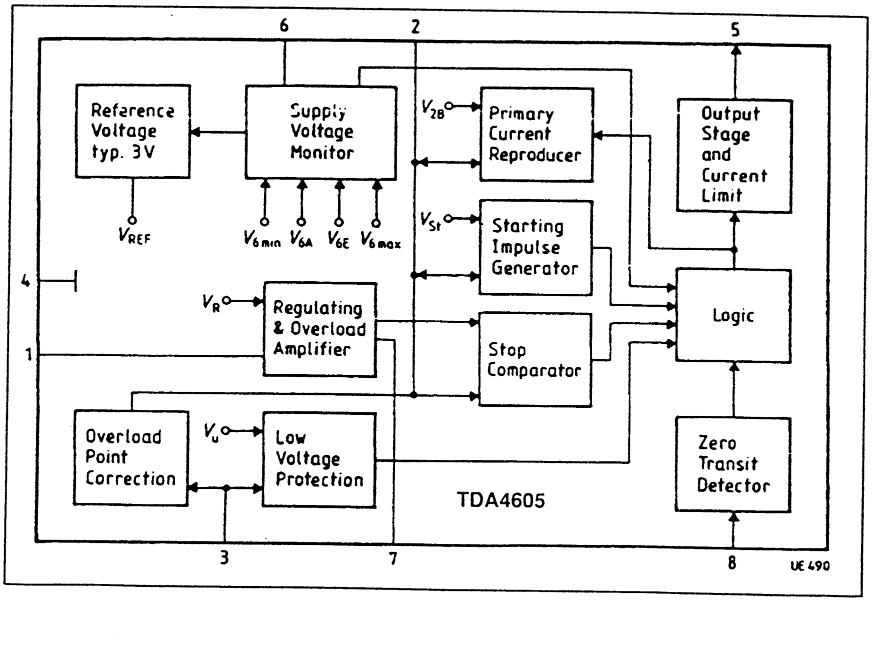

VPD 05025
P-DIP-8

Type	Ordering Code	Package
TDA 4605	Q6700-A8078	P-DIP-8

The IC TDA 4605 controls the MOS-power transistor and performs all necessary regulation and monitoring functions in free running flyback converters. Since good load regulation over a wide load range is attained, this IC is applicable tor consumer and industrial power supplies.

The serial circuit of power transistor and primary winding of the flyback transformer is connected to the input voltage. During the switch-on period of the transistor, energy is stored in the transformer and during the switch-off period it is fed to the load via the secondary winding. By varying switch-on time of the power transistor, the IC controls each portion of energy transferred to the secondary side such that the output voltage remains nearly independent ot load variations.

The required control information is taken from the input voltage during the switch-on period and from a regulation winding during the swich off period.


6
2
5
Reference Voltage typ. 3V
Supply Voltage Monitor
V_{2B}
Primary Current Reproducer
Output Stage and Current Limit
V_{REF}
V_{6min}
V_{6A}
V_{6E}
V_{6max}
V_{St}
Starting Impulse Generator
4
V_R
Regulating & Overload Amplifier
Logic
1
Stop Comparator
Overload Point Correction
V_u
Low Voltage Protection
Zero Transit Detector
TDA4605
3
7
8
UE 490

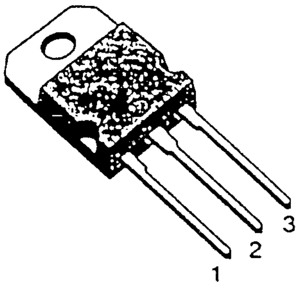
Pin Definitions and Functions

Pin No.	Function
1	**Regulating Voltage:** Information input concerning secondary voltage. By comparing the regulating voltage - obtained from the regulating winding at the transformer - with the internal reference voltage, the outpout impulse width on pin 5 is adapted to the load at the secondary side (normal, overload, short circuit, no load).
2	**Primary Current Simulation:** Information input regarding the primary current. The primary current rise in the primary winding is simulated at pin 2 as a voltage rise by means at external RC-element. When a value is reached that is derived from the regulating voltage at pin 1, the output impulse at pin 5 is terminated. The RC-element serves to set the maximum power at the overload point set.
3	**Primary Voltage Detector:** Input for primary voltage monitor. When the line voltage is too low, the IC is switched off by comparing V_3 with an internal reference. Voltage at pin 3 is used for overload point compensation. Overload point compensation will work 7 times the under voltage limit set.
4	**Ground**
5	**Output:** Push-pull-output provides ± 1 A for rapid charge and discharge of the gate capacitance at the power MOS transistor.
6	**Supply Voltage:** Supply voltage input. From it a stable internal reference voltage V_{REF} and the switching thresholds V_{6A}, V_{6E}, $V_{6\ max}$ and $V_{6\ min}$ for the supply voltage detector is formed. If $V_6 > V_{6E}$ then V_{REF} is switched on and swiched off when $V_6 < V_{6A}$. In addition the logic is only enable tor V6 min > V6.
7	**Soft-Start:** Input for soft start. Start up will begin with short pulses by connecting a capacitor from pin 7 to ground.
8	**Zero Detector:** Input tor the oscillation feedback. After starting oscillation, every zero transit of the feedback voltage (falling edge) triggers an output impulse at pin 5. The trigger threshold is at + 50 mV typical.

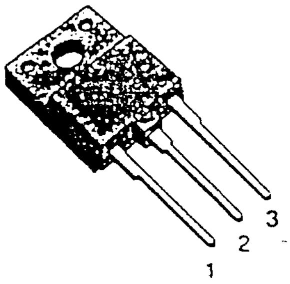
STH5N90
STH5N90FI
N-CHANNEL ENHANCEMENT MODE POWER MOS TRANSISTOR (Q101)

TYPE	V_{DSS}	$R_{DS(on)}$	I_D
STH5N90	900 V	< 2.4 Ω	5.3 A
STH5N90FI	900 V	< 2.4 Ω	3.5 A

- Typical $R_{DS(on)}$ = 1.9 Ω
- Avalanche Rugged technology
- 100% avalanche tested
- Repetitive avalanche data at 100°C
- Low input capacitance
- Low gate charge
- Application oriented characterization



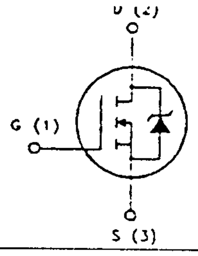
TO-218



ISOWATT218

APPLICATIONS
- High current, high speed switching
- Switch mode power supplies (SMPS)
- Consumer and industrial lighting
- DC-AC inverters for welding equipment and uninterruptible power supply (UPS

INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value		Unit
		STH5N90	STH5N90FI	
V_{DS}	Drain-source Voltage (V_{GS} = 0)	900		V
V_{DGR}	Drain-gate Voltage (R_{GS} = 20 kΩ)	900		V
V_{GS}	Gate-source Voltage	± 20		V
I_D	Drain Current (continuous) at T_c = 25 °C	5.3	3.5	A
I_D	Drain Current (continuous) at T_c = 100 °C	3.3	2.2	A
I_{DM} (•)	Drain Current (pulsed)	20	20	A
P_{tot}	Total Dissipation at T_c = 25 °C	150	60	W
	Derating Factor	1.2	0.48	W/°C
V_{ISO}	Insulation Withstand Voltage (DC)	-	4000	V
Tstg	Storage Temperature	-65 to 150		°C
T_j	Max. Operating Junction Temperature	150		°C

(•) *Pulse width limited by safe operating area*

			TO-218	ISOWATT218	
$R_{thj-case}$	Thermal Resistance Junction-case	Max	0.83	2.08	°C/W
$R_{thj-amb}$	Thermal Resistance Junction-ambient	Max	30		°C/W
$R_{thc-sink}$	Thermal Resistance Case-sink	Typ	0.1		°C/W
T_l	Maximum Lead Temperature For Soldering Purpose		300		°C

AVALANCHE CHARACTERISTICS

Symbol	Parameter	Max Value	Unit
I_{AR}	Avalanche Current, Repetitive or Not-Repetitive (pulse width limited by T_j max, $\delta < 1\%$)	5.3	A
E_{AS}	Single Pulse Avalanche Energy (starting T_j = 25 °C, $I_D = I_{AR}$, V_{DD} = 50 V)	300	mJ
E_{AR}	Repetitive Avalanche Energy (pulse width limited by T_j max, $\delta < 1\%$)	14	mJ
I_{AR}	Avalanche Current; Repetitive or Not-Repetitive (T_c = 100 °C, pulse width limited by T_j max, $\delta < 1\%$)	3.1	A

ELECTRICAL CHARACTERISTICS (T_{case} = 25 °C unless otherwise specified)

OFF

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_{(BR)DSS}$	Drain-source Breakdown Voltage	I_D = 250 μA V_{GS} = 0	900			V
I_{DSS}	Zero Gate Voltage Drain Current (V_{GS} = 0)	V_{DS} = Max Rating			250	μA
		V_{DS} = Max Rating x 0.8 T_c = 125 °C			1000	μA
I_{GSS}	Gate-body Leakage Current (V_{DS} = 0)	V_{GS} = ± 20 V			± 100	nA

ON (*)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}$ I_D = 250 μA	2	3	4	V
$R_{DS(on)}$	Static Drain-source On Resistance	V_{GS} = 10V I_D = 2.5 A		1.9	2.4	Ω
		V_{GS} = 10V I_D = 2.5 A T_c = 100 °C			4.8	Ω
$I_{D(on)}$	On State Drain Current	$V_{DS} > I_{D(on)} \times R_{DS(on)max}$ VGS = 10 V	5.3			A

DYNAMIC

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
g_{fs} (*)	Forward Transconductance	$V_{DS} > I_{D(on)} \times R_{DS(on)max}$ I_D = 2.5 A	2	4		S
C_{iss}	Input Capacitance	V_{DS} = 25 V f = 1 MHz V_{GS} = 0		1190	1450	pF
C_{oss}	Output Capacitance			165	200	pF
C_{rss}	Reverse Transfer Capacitance			70	85	pF

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$t_{d(on)}$ t_r	Turn-on Time Rise Time	V_{DD} = 400 V I_D =2.5 A R_G = 50 Ω V_{GS} = 10 V (see test circuit, figure 3)		50 85	65 105	ns ns
$(di/dt)_{on}$	Turn-on Current Slope	V_{DD} = 640 V I_D = 5.5 A R_G = 50 Ω V_{GS} = 10 V (see test circuit, figure 5)		200		A/μs
Q_g Q_{gs} Q_{gd}	Total Gate Charge Gate-Source Charge Gate-Drain Charge	V_{DD} = V I_D = 6 A V_{GS} = 10 V		75 9 33	95	nC nC nC

SWITCHING OFF

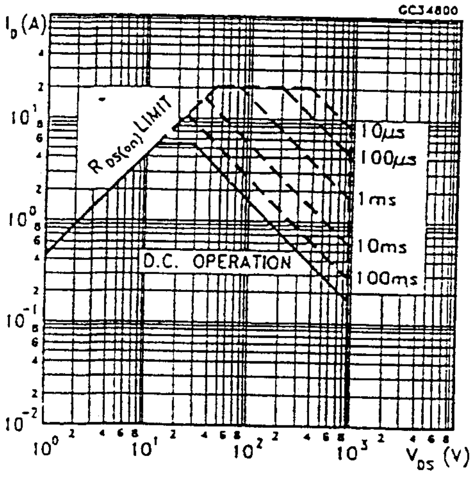
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$t_{r(Voff)}$ t_f t_c	Off-voltage Rise Time Fall Time Cross-over Time	V_{DD} = 640 V I_D = 5.5 A R_G = 50 Ω V_{GS} = 10 V (see test circuit, figure 5)		120 30 160	150 40 200	ns ns ns

SOURCE DRAIN DIODE

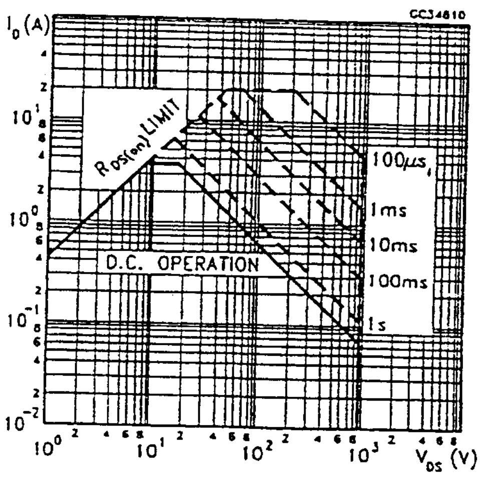
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{SD} I_{SDM} (•)	Source-drain Current Source-drain Current (pulsed)				5.3 20	A A
V_{SD} (*)	Forward On Voltage	I_{SD} = 5.3 A V_{GS} = 0			2	V
t_{rr} Q_{rr} I_{RRM}	Reverse Recovery Time Reverse Recovery Charge Reverse Recovery Current	I_{SD} = 5.3 A di/dt = 100 A/μs V_{DD} = 80 V T_j = 150°C (see test circuit, figure 5)		700 7.7 22		ns μC A

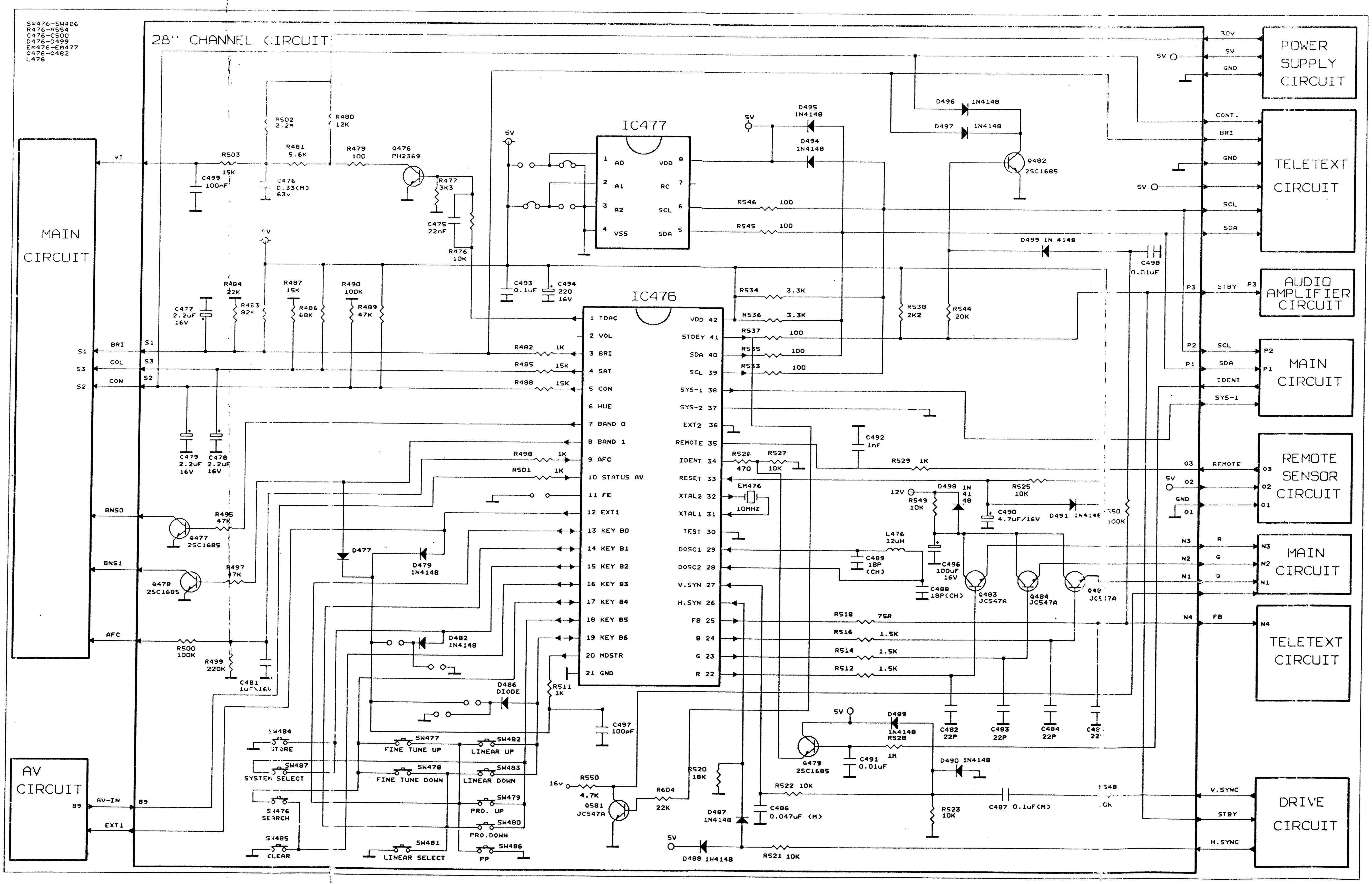
(*) *Pulsed: Pulse duration = 200 μs, duty cycle 15% (•) Pulse width limited by safe operating area*

Safe Operating Areas For TO-218



Safe Operating Areas For ISOWATT218




SW476-SW486
R476-R554
C476-C500
D476-D499
EM476-EM477
Q476-Q482
L476
28" CHANNEL CIRCUIT
MAIN CIRCUIT
AV CIRCUIT
POWER SUPPLY CIRCUIT
TELETEXT CIRCUIT
AUDIO AMPLIFIER CIRCUIT
MAIN CIRCUIT
REMOTE SENSOR CIRCUIT
MAIN CIRCUIT
TELETEXT CIRCUIT
DRIVE CIRCUIT
IC477
1 A0
2 A1
3 A2
4 VSS
VDD 8
RC 7
SCL 6
SDA 5
IC476
1 TDAC
2 VOL
3 BRI
4 SAT
5 CON
6 HUE
7 BAND 0
8 BAND 1
9 AFC
10 STATUS AV
11 FE
12 EXT1
13 KEY B0
14 KEY B1
15 KEY B2
16 KEY B3
17 KEY B4
18 KEY B5
19 KEY B6
20 MDSTR
21 GND
VDD 42
STDEY 41
SDA 40
SCL 39
SYS-1 38
SYS-2 37
EXT2 36
REMOTE 35
IDENT 34
RESET 33
XTAL2 32
XTAL1 31
TEST 30
DOSC1 29
DOSC2 28
V.SYN 27
H.SYN 26
FB 25
B 24
G 23
R 22
VT
BRI
COL
CON
S1
S3
S2
BNS0
BNS1
AFC
AV-IN
EXT1
B9
30V
5V
GND
CONT.
BRI
GND
5V
SCL
SDA
STBY
P3
P2
P1
SCL
SDA
IDENT
SYS-1
REMOTE
O3
O2
O1
5V
GND
R
G
B
N3
N2
N1
N4
FB
V.SYNC
STBY
H.SYNC
R503 15K
C499 100nF
R502 2.2M
C476 0.33(M) 63V
R481 5.6K
R480 12K
R479 100
Q476 PH2369
R477 3K3
C475 22nF
R476 10K
R484 22K
C477 2.2uF 16V
R483 82K
R487 15K
R486 68K
R490 100K
R489 47K
C493 0.1uF
C494 220 16V
R482 1K
R485 15K
R488 15K
C479 2.2uF 16V
C478 2.2uF 16V
Q477 2SC1685
R495 47K
Q478 2SC1685
R497 47K
R500 100K
R499 220K
C481 1uF\16V
D477
D479 1N4148
R498 1K
R501 1K
D482 1N4148
D486 DIODE
R511 1K
C497 100pF
SW484 STORE
SW487 SYSTEM SELECT
SW476 SEARCH
SW485 CLEAR
SW477 FINE TUNE UP
SW478 FINE TUNE DOWN
SW481 LINEAR SELECT
SW482 LINEAR UP
SW483 LINEAR DOWN
SW479 PRO. UP
SW480 PRO.DOWN
SW486 PP
D495 1N4148
D494 1N4148
D496 1N4148
D497 1N4148
Q482 2SC1685
R546 100
R545 100
D499 1N 4148
C498 0.01uF
R534 3.3K
R536 3.3K
R537 100
R535 100
R533 100
R538 2K2
R544 20K
C492 1nf
R526 470
R527 10K
R529 1K
EM476 10MHZ
12V
R549 10K
D498 1N 41 48
R525 10K
C490 4.7uF/16V
D491 1N4148
R550 100K
L476 12uH
C489 18P (CH)
C496 100uF 16V
C488 18P(CH)
Q483 JC547A
Q484 JC547A
Q49 JC547A
R518 75R
R516 1.5K
R514 1.5K
R512 1.5K
C482 22P
C483 22P
C484 22P
C48 22
5V
D489 1N4148
R528 1M
Q479 2SC1685
C491 0.01uF
D490 1N4148
R520 18K
16V
R550 4.7K
Q581 JC547A
R604 22K
D487 1N4148
C486 0.047uF (M)
R522 10K
R523 10K
C487 0.1uF(M)
R548 0K
D488 1N4148
R521 10K

MICROPROCESSOR (uP) STAGE

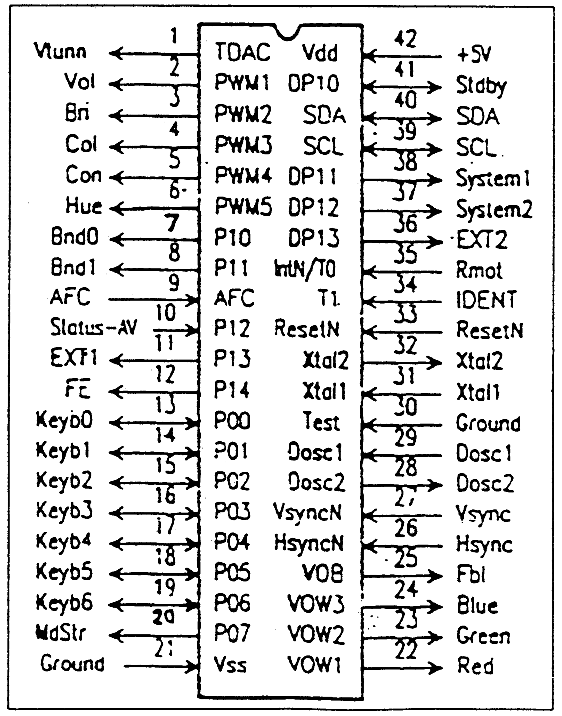
The uP of chassis is CTV352S (PCA84C841). Pin 1 of IC commands the tuning voltage. The changing between 0-5Vdc at pin 1 of IC (CTV352S) drives base of Q476 and through R479 at the collector of Q476 occurs 0-30Vdc voltage relation in with required channel. This voltage goes pin VT of tuner. Pins 2, 3, 4, 5 of IC are analog value outputs and these are volume, brightness, colour and contrast. PI N 7 and 8 of IC are band switching voltages outputs and Q477, Q478 which connected to these pins are buffer transistors and drive Q162 and Q161. The driver transistors (Q161, Q162) produce switching voltage of relevant band. If both transistor Q477, Q478 are cut off. The transistor (Q163) will give VHF1 voltage for tuner. PIN 9 of IC is AFC control and stop tuning with PIN 34 during automatic channel searching.
How to proceed:
During tuning, uP checks the voltage at PIN 34 (This PIN is mute input and has 5Vdc when the station is clamped). When the voltage has been got by uP, tuning slows down and uP checks AFC voltage at PIN 9. PIN 34 is off-timer input, it means while TV set on, if transmission is interrupted, the voltage at PIN 34 will be 0 V and TV set will be switched to standby about 5 minutes later. Pin 12 is AV control and TV mode has a value of 5Vdc (LOJIC 1), In AV mode this voltage decreases 0Vdc (LOJIC 0). PIN 13, 14, 15, 16, 17, 18, 19 are keyboard inputs. PIN 22, 23, 24 are OSD RGB outputs. PIN 25 fast blanking output. PIN 26 and PIN 27 are synchronize inputs for OSD data PIN 26 is horizontal input, PIN 27 is vertical synchronize input. The circuit which is connected PINS 28 and 29, is and oscillator circuit, PIN 28 is oscillator output, PIN 29 is oscillator input. PINS 31 and 32 are (EM476) 10 MHz pulses which are necessary for operating of system are obtained from EM476. PIN33 reset the system. When the TV-set is switched on from main on-off switch; R524, R525, C490, D491 reset the system. PIN 35 is infrared receiver input. When IR data arrives EM477, it is amplified and signal is processed by pulse shaper for uP. This data is decoded by IR decoder connected PIN 35. PIN 39 and 40 are SCL and SDA output and input. SCL produces pulses for communication of uP with memory IC477 (PCF8582P). SDA is data line between IC and uP. PIN 41 is standby identification. PIN 42 is supply voltage (5Vdc) for uP.

CTV352S (PCA84C841)

IC476

CTV352S is a low cost television receiver control system, based on the PCF84C841 microcontroller. It is a voltage synthesis tuning (VST) system with on-screen-display (OSD) of all relevant control functions. Analogue picture settings are controlled by 4 on-chip digital to analogue convertors. Sound volume can be controlled by the fifth on-chip digital to analogue convertor in a mono-only system. Full sound (Volume, Bass, Treble, Balance) can be controlled via the I²C-bus in a German Stereo and/or Nicam configuration, using a Hi Fi sound audio processor.
CTV352S can control up to two SCART plugs and S-VHS plug.
A second tuner is controlled for satellite tuning.
The system is colour standard independent and can be used all over the world. It can select 3 systems (PAL, SECAM and NTSC) and has additional options for sound systems.

The pinning of CTV252S and CTV352S including the I/O expander is given below.


Vtunn 1 TDAC
Vol 2 PWM1
Bri 3 PWM2
Col 4 PWM3
Con 5 PWM4
Hue 6 PWM5
Bnd0 7 P10
Bnd1 8 P11
AFC 9 AFC
Status-AV 10 P12
EXT1 11 P13
FE 12 P14
Keyb0 13 P00
Keyb1 14 P01
Keyb2 15 P02
Keyb3 16 P03
Keyb4 17 P04
Keyb5 18 P05
Keyb6 19 P06
MdStr 20 P07
Ground 21 Vss
Vdd 42 +5V
DP10 41 Stdby
SDA 40 SDA
SCL 39 SCL
DP11 38 System1
DP12 37 System2
DP13 36 EXT2
IntN/T0 35 Rmot
T1 34 IDENT
ResetN 33 ResetN
Xtal2 32 Xtal2
Xtal1 31 Xtal1
Test 30 Ground
Dosc1 29 Dosc1
Dosc2 28 Dosc2
VsyncN 27 Vsync
HsyncN 26 Hsync
VOB 25 Fbl
VOW3 24 Blue
VOW2 23 Green
VOW1 22 Red

CTV352S PCA84C841

Pinning diagram of CTV352S with satellite tuner.

CTV352S (PCA84C841)

PCA84C841 pins	Port	Pin name	Function
1	TDAC	VTUNN	tuning voltage control output
2	PWM1	VOL	volume control output
3	PWM2	BRI	brightness control output
4	PWM3	COL	colour control output
5	PWM4	CON	contrast control output
6	PWM5	HUE	hue control output
7	P10 1)	BND-0	band-switch 0 output
8	P11 1)	BND-1	band-switch 1 output
9	AFC	AFC	analogue AFC sense input
10	P12	Status-AV	AV status input
11	P13 1)	EXT1	external source select output
12	P14 1)	FE	FE/AV select output
13	P00 1)	KEYB0	keyboard scan line input/output
14	P01 1)	KEYB1	keyboard scan line input/output
15	P02 1)	KEYB2	keyboard scan line input/output
16	P03 1)	KEYB3	keyboard scan line input/output
17	P04 1)	KEYB4	keyboard scan line input/output
18	P05 1)	KEYB5	keyboard scan line input/output
19	P06 1)	KEYB6	keyboard scan line input/output
20	P07 1)	MDSTR	system mode strobe output
21	Vss	GROUND	ground supply input
22	VOW1	RED	OSD red output
23	VOW2	GREEN	OSD green output
24	VOW3	BLUE	OSD blue output
25	VOB	FBL	OSD fast blanking output
26	HSYNCN	HSYNC	horizontal synchronization input
27	VSYNCN	VSYNC	vertical synchronization input
28	DOSC2	DOSC2	LC oscillator input for OSD
29	DOSC1	DOSC1	LS oscillator output for OSD
30	TEST		test input; connected to ground
31	XTAL1		oscillator input; 10 MHz crystal
32	XTAL2		oscillator output
33	RESETN		power-on reset input/output
34	T1	IDENT	horizontal coincidence input
35	INTN/T0	RMOT	RC-5 remote control input
36	DP13 1)	EXT2	external source select output
37	DP12 1)	SYSTEM2	System select output
38	DP11 1)	SYSTEM1	System select output
39	DP07	SCL	I²C-bus clock signal output
40	DP06	SDA	I²C-bus data signal output
41	DP10	STDBY	Standby/On control input/output
42	Vdd		+5V supply voltage input

***Note:** 1) These pins are read at "cold start", they define the configuration/options of the TV system controlled by CTV352S*

***Table 1** Pin description of PCA84C841 micro controller in CTV352S.*

PCF8582A

(IC-477)

256 x 8-bit STATIC CMOS EEPROM WITH I²C-BUS INTERFACE

GENERAL DESCRIPTION

The PCF8582A is a 2 Kbits 5 Volt electrically erasable programmable read only memory (EEPROM) organized as 256 by 8-bits. It is designed in a floating gate CMOS technology.

As data bytes are received and transmitted via the serial I²C-bus, an eight pin DIL package is sufficient.

Up to eight PCF8582A devices may be connected to the I²C-bus.

Chip select is accomplished by three address inputs.

Timing of the Erase/Write cycle can be done in two different ways; either by connecting an external clock to the "Programming Timing Control", pin (7 or 13), or by using an internal oscillator. If the latter is used an RC time constant must be connected to pin 7 or 13.

FEATURES

- Non-volatile storage of 2 Kbits organized as 256 x 8
- Only one power supply required (5 V)
- On chip voltage multiplier for erase/write
- Serial input/output bus (I²C)
- Automatic word address incrementing
- Low power consumption
- One point erase/write timer
- Power on reset
- 10.000 erase/write cycles per byte
- 10 years non-volatile data retention
- Infinite number of read cycles
- Pin and address compatible to PCF8570, PCF8571, PCF8582 and PCD8572
- External clock signal possible.

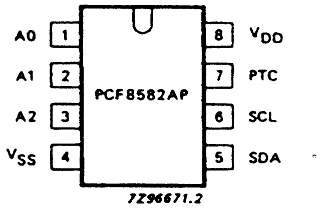
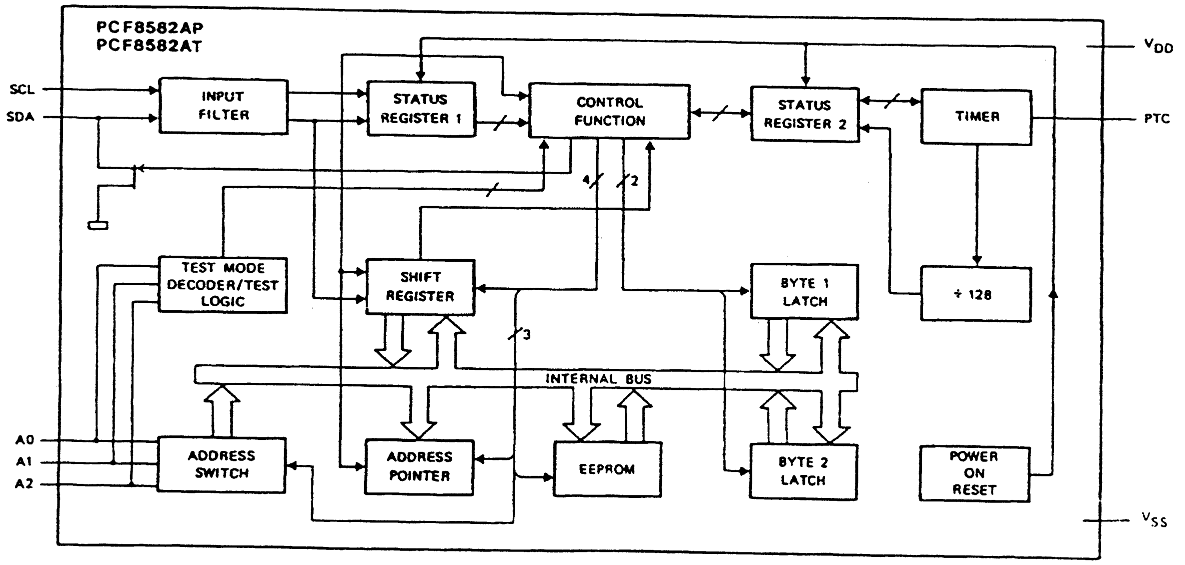
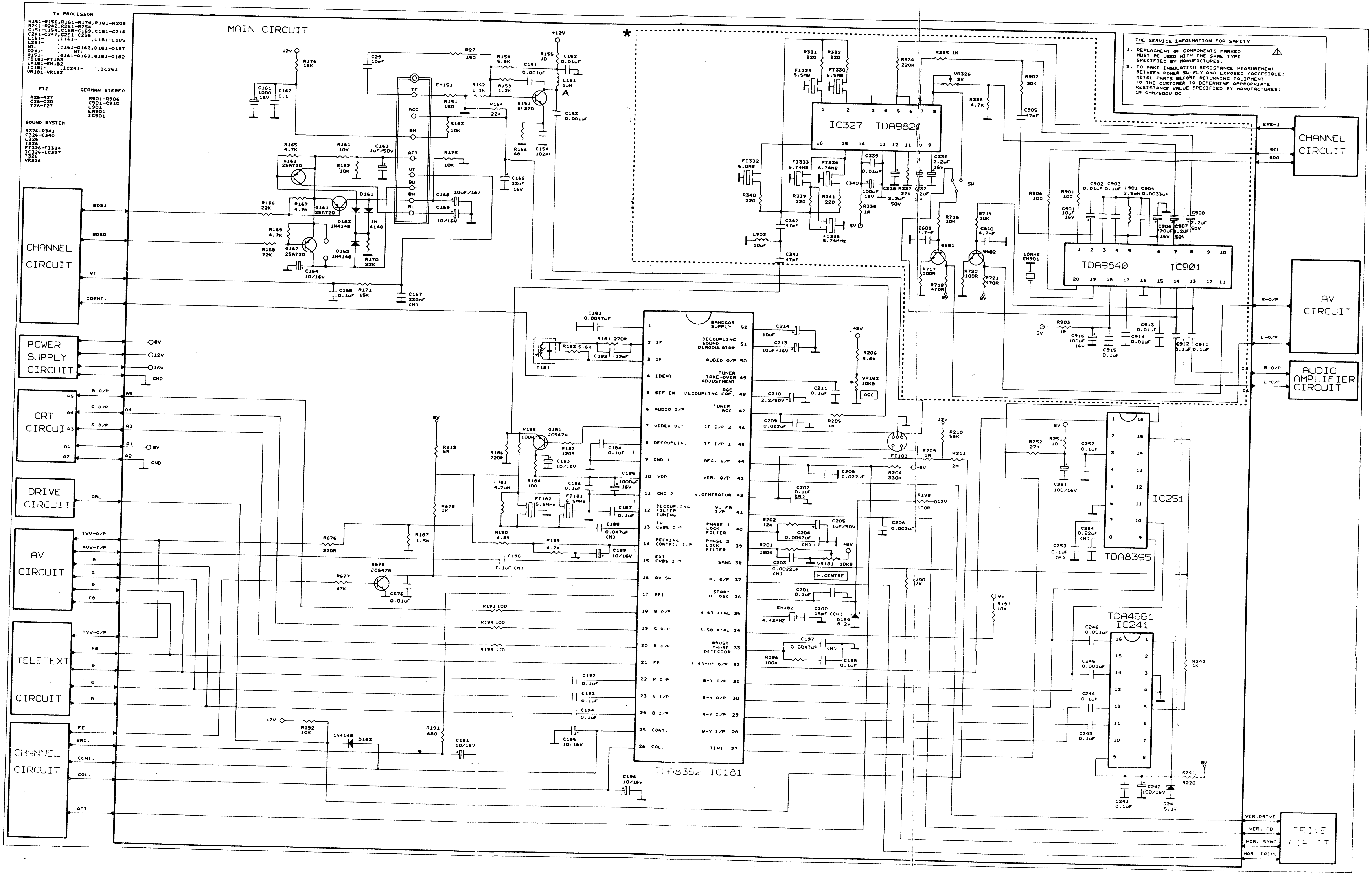


Fig. 2 (a) Pinning diagram.

1	A0	address inputs/test mode select
2	A1	
3	A2	
4	V_{SS}	ground
5	SDA	I²C-bus lines
6	SCL	
7	PTC	programming time control
8	V_{DD}	positive supply

Block diagram




MAIN CIRCUIT
CHANNEL CIRCUIT
POWER SUPPLY CIRCUIT
CRT CIRCUIT
DRIVE CIRCUIT
AV CIRCUIT
TELETEXT CIRCUIT
AUDIO AMPLIFIER CIRCUIT
IC327 TDA9821
TDA9840 IC901
TDA8362 IC181
IC251 TDA8395
TDA4661 IC241
BDS1
BDSO
VT
IDENT.
AFT
SYS-1
SCL
SDA
R-O/P
L-O/P
B O/P
G O/P
R O/P
ABL
TVV-O/P
AVV-I/P
FB
BRI.
CONT.
COL.
VER.DRIVE
VER. FB
HOR. SYNC
HOR. DRIVE
8V
12V
16V
GND
+12V
EM151
Q151 BF370
Q161 2SA720
Q162 2SA720
Q163 2SA720
Q181 JC547A
Q676 JC547A
Q681
Q682
D161
D162 1N4148
D163 1N4148
D183 1N4148
FI181 6.5MHz
FI182 5.5MHz
FI183
FI329 5.5MB
FI330 6.5MB
FI332 6.0MB
FI333 5.74MB
FI334 6.74MB
FI335 5.74MHz
EM182 4.43MHz
EM901 10MHZ
VR182 10KB
VR181 10KB
VR326 2K
AGC
H.CENTRE
T181
SW

TV PROCESSOR

R151-R156,R161-R174,R181-R208
R241-R242,R251-R254
C151-C154,C168-C169,C181-C216
C241-C247,C251-C256
L151- ,L161- ,L181-L185
L251- ,
NIL ,D161-D163,D181-D187
D241- , NIL
Q151- ,Q161-Q163,Q181-Q182
FI181-FI183
EM181-EM182
IC181- ,IC241- ,IC251
VR181-VR182

FTZ

R26-R27
C26-C30
T26-T27

GERMAN STEREO

R901-R906
C901-C910
L901
EM901
IC901

SOUND SYSTEM

R326-R341
C326-C340
L326
T326
FI326-FI334
IC326-IC327
T326
VR326

THE SERVICE INFORMATION FOR SAFETY

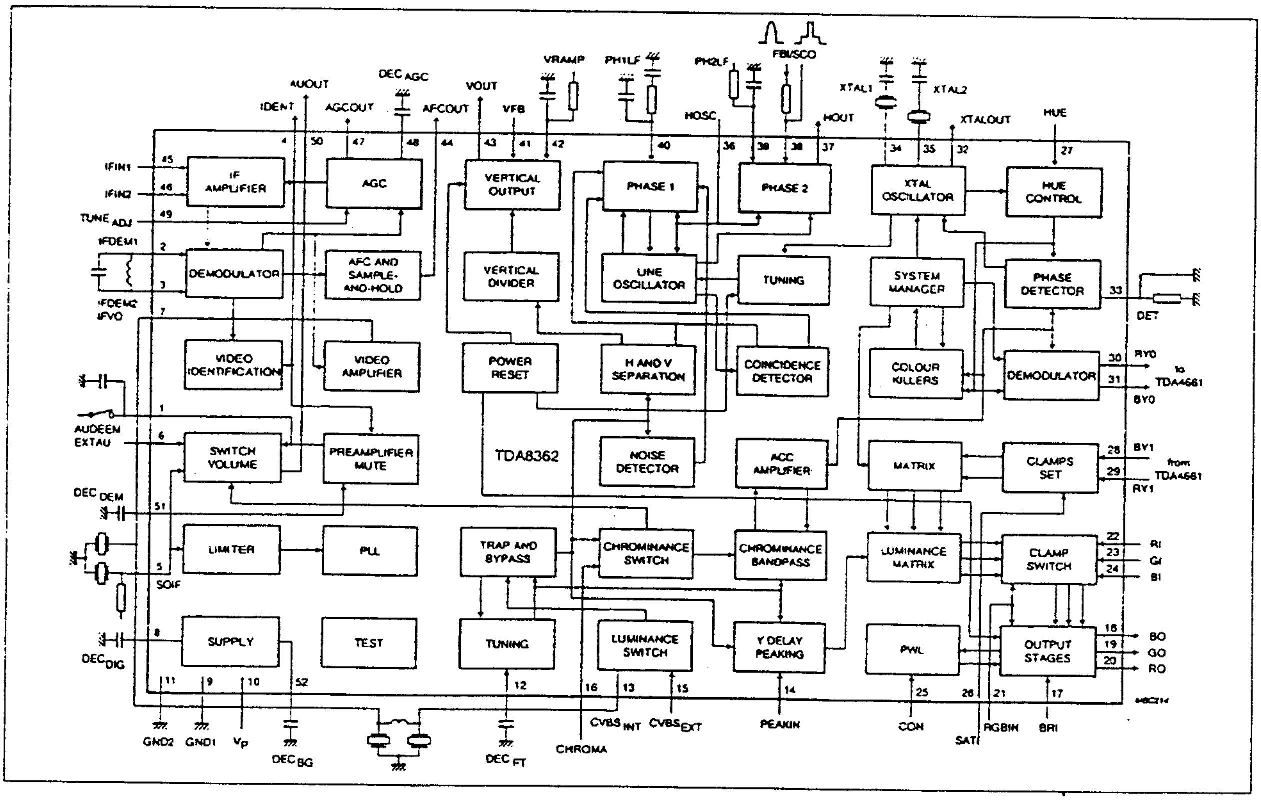
1. REPLACMENT OF COMPONENTS MARKED ⚠ MUST BE USED WITH THE SAME TYPE SPECIFIED BY MANUFACTURES.
2. TO MAKE INSULATION RESISTANCE MEASUREMENT BETWEEN POWER SUPPLY AND EXPOSED (ACCESIBLE) METAL PARTS BEFORE RETURNING EQUIPMENT TO THE CUSTOMER TO DETERMINE APPROPRIATE RESISTANCE VALUE SPECIFIED BY MANUFACTURES: 1M OHM/500V DC

ANALOG OPERATION PART

IC181 (TDA8362) which mounted on chassis does following operations: Picture IF, sound IF, colour decoder, horizantal oscillator, vertical oscillator and AFC.

The outputs of FI183 filter are connected to PIN 45 and 46 of IC181. Which are picture IF inputs. Here picture is amplified min 64 dB and given PIN 7. There is a buffer made of Q181. CCVS divide into two parts: Picture and sound. The picture IF gain is proportional to AGC voltage fixed by VR182 and R205. The AGC voltage output PIN is 47. PIN 44 is AFC output. When any station has been found exactly, there should be 4Vdc at PIN 44 (half of the supply voltage). PIN 4 is mute output and connected PIN 34 of uP. Approximately 5 minutes after station sign-off or a transmission failure, uP checks voltage at PIN 4. Five minutes after supply voltage cut-off, uP switched-on TV-set to standby. PIN 17, 25, 26 are brightness, contrast and colour inputs. T181 is demodulator coil and connected pins 2 and 3 of IC181. PIN 6 is external sound input, PIN 15 is external video input. When PIN 16 of IC181 has 0 Vdc, IC has been at normal TV operation. If PIN 16 of IC181 has 8Vdc IC has been at AV mode. PIN 22, 23, 24 external RGB inputs. PIN21 is fast blanking (FB). PIN 30 and 31 are R-Y, B-Y outputs. This signals goes to B-Y, R-Y inputs at PINS 28 and 29 of IC181 VIA IC241 (base band delay line). IC251 secam decoder. PIN 35 is 4,43 MHz (EM182) crystal oscillator input. This crystal produces suitable frequency for colour decoder and after divides horizontal and vertical oscillator frequencies are obtained from this crystal. PIN 42 provides necessary voltage for operating of vertical RAMP generator. PIN 43 is vertical oscillator output and PIN 37 is horizontal oscillator output. PINS 18, 19, 20 are RGB output. After the signals are amplified on CRT board, the CRT is driven by signal. PIN 50 is sound output and comes to IC401 (TDA8425)

Block diagram TDA8362



IFIN1
IFIN2
TUNE ADJ
IFDEM1
IFDEM2
IFVO
AUDEEM
EXTAU
DEC DEM
SOIF
DEC DIG
IDENT
AUOUT
AGCOUT
DEC AGC
AFCOUT
VOUT
VFB
VRAMP
PH1LF
PH2LF
HOSC
FBI/SCO
HOUT
XTAL1
XTAL2
XTALOUT
HUE
IF AMPLIFIER
AGC
DEMODULATOR
AFC AND SAMPLE-AND-HOLD
VIDEO IDENTIFICATION
VIDEO AMPLIFIER
SWITCH VOLUME
PREAMPLIFIER MUTE
LIMITER
PLL
SUPPLY
TEST
VERTICAL OUTPUT
VERTICAL DIVIDER
POWER RESET
TDA8362
TRAP AND BYPASS
TUNING
PHASE 1
LINE OSCILLATOR
H AND V SEPARATION
NOISE DETECTOR
CHROMINANCE SWITCH
LUMINANCE SWITCH
PHASE 2
TUNING
COINCIDENCE DETECTOR
ACC AMPLIFIER
CHROMINANCE BANDPASS
Y DELAY PEAKING
XTAL OSCILLATOR
SYSTEM MANAGER
COLOUR KILLERS
MATRIX
LUMINANCE MATRIX
PWL
HUE CONTROL
PHASE DETECTOR
DEMODULATOR
CLAMPS SET
CLAMP SWITCH
OUTPUT STAGES
DET
RYO
BYO
to TDA4661
BY1
RY1
from TDA4661
RI
GI
BI
BO
GO
RO
GND2
GND1
Vp
DEC BG
DEC FT
CHROMA
CVBS INT
CVBS EXT
PEAKIN
CON
SAT
RGBIN
BRI
MBC714

TDA8362 (IC181)

Multistandard TV processor

FEATURES

- Multistandard vision IF circuit (positive and negative modulation)
- Multistandard FM sound demodulator (4.5 MHz to 6.5 MHz)
- Video and audio switches
  (CVBS internal/external, S-VHS and audio internal/external)
- Integrated chrominance trap and bandpass filters (automatically calibrated)
- Integrated luminance delay line
- PAL/NTSC colour decoder with automatic search system
- Easy interfacing with the TDA8395 (SECAM decoder)
  for multistandard applications
- RGB control circuit with linear RGB inputs and fast blanking
- Horizontal synchronization with two control loops and alignment-free horizontal oscilator
- Vertical count-down circuit and vertical preamlifier
- Low dissipation (600 mW)
- Small amount of peripheral components compared with competition ICs
- Only one adjustment (video IF demodulator).

QUICK REFERENCE DATA

SYMBOL	PARAMETER	MIN.	TYP.	MAX.	UNIT
V_P	positive supply voltage	–	8.0	–	V
I_P	positive supply current	–	80	–	mA
Input voltages					
$V_{45/46(RMS)}$	video IF amplifier sensitivity (RMS value)	–	70	–	µV
$V_{5(RMS)}$	sound IF amplifier sensitivity (RMS value)	–	1.0	–	mV
$V_{6(RMS)}$	external audio input (RMS value)	–	350	–	mV
$V_{15(p-p)}$	external CVBS input (peak–to–peak value)	–	1.0	–	V
$V_{21(p-p)}$	RGB inputs (peak–to–peak value)	–	0.7	–	V
Control voltages					
$V_{control}$	control voltages for Volume, Contrast, Saturation, Brightness, Hue and Peaking	0	–	5.0	V
Output signals					
$V_{O(p-p)}$	demodulated CVBS output (peak-to-peak value)	–	2.5	–	V
V_{47}	tuner AGC control voltage range	0	–	10	V
V_{44}	AFC output voltage swing	–	6.0	–	V
$V_{50(RMS)}$	audio output voltage	-	700	-	mV
$V_{18-20(p-p)}$	RGB output signal amplitudes (peak-to-peak value)	-	4.0	-	V
I_{37}	horizontal output current	10	-	-	mA
I_{43}	vertical output current	1	-	-	mA

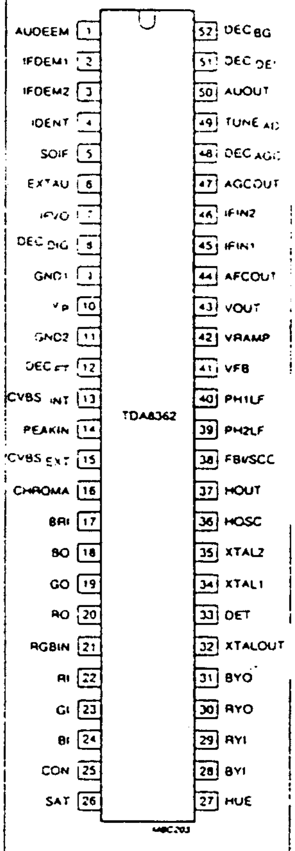
GENERAL DESCRIPTION

The TDA8362 contains nearly all small signal functions that are required for a colour television receiver.
For a complete receiver the following circuits need to be added: a base-band delay line (TDA4661), a tuner and output stages for audio, video and horizontal and vertical deflection.

PINNING

SYMBOL	PIN	DESCRIPTION
AUDEEM	1	audio de-emphasis
IFDEM1	2	IF demodulator tuned circuit
IFDEM2	3	IF demodulator tuned circuit
IDENT	4	video identification output
SOIF	5	sound IF input and volume control
EXTAU	6	external audio input
IFVO	7	IF video output
DEC$_{DIG}$	8	decoupling digital supply
GND1	9	ground 1
V$_{P}$	10	positive supply voltage (+8V)
GND2	11	ground 2
DEC$_{FT}$	12	decoupling filter tuning
CVBS$_{INT}$	13	internal CVBS input
PEAKIN	14	peaking control input
CVBS$_{EXT}$	15	external CVBS input
CHROMA	16	chrominance and A/V switch input
BRI	17	brightness control input
BO	18	blue output
GO	19	green output
RO	20	red output
RGBIN	21	RGB insertion and blanking input
RI	22	red output
GI	23	green output
BI	24	blue output
CON	25	contrast control input
SAT	26	saturation control input
HUE	27	hue control input (or chrominance outp.)
BYI	28	B-Y input signal
RYI	29	R-Y input signal
RYO	30	R-Y output signal
BYO	31	B-Y output signal
XTALOUT	32	4.43 MHz output for TDA8395
DET	33	loop filter burst phase detector
XTAL1	34	3.58 MHz XTAL connection
XTAL2	35	4.43 MHz XTAL connection
HOSC	36	start horizontal oscillator
HOUT	37	horizontal output
FBI/SCO	38	flyback input/sandcastle output
PH2LF	39	phase 2 loop filter
PH1LF	40	phase 1 loop filter
VFB	41	vertical feedback input
VRAMP	42	vertical ramp generator
VOUT	43	vertical output
AFCOUT	44	AFC output
IFIN1	45	IF input 1
IFIN2	46	IF input 2
AGCOUT	47	tuner AGC output
DEC$_{AGC}$	48	AGC decoupling capacitor
TUNE$_{ADJ}$	49	tuner take-over adjustment
AUOUT	50	audio output
DEC$_{DEM}$	51	decoupling sound demodulator
DEC$_{BG}$	52	decoupling bandgap supply

TDA8362


AUDEEM 1
IFDEM1 2
IFDEM2 3
IDENT 4
SOIF 5
EXTAU 6
IFVO 7
DEC DIG 8
GND1 9
VP 10
GND2 11
DEC FT 12
CVBS INT 13
PEAKIN 14
CVBS EXT 15
CHROMA 16
BRI 17
BO 18
GO 19
RO 20
RGBIN 21
RI 22
GI 23
BI 24
CON 25
SAT 26
52 DEC BG
51 DEC DEM
50 AUOUT
49 TUNE ADJ
48 DEC AGC
47 AGCOUT
46 IFIN2
45 IFIN1
44 AFCOUT
43 VOUT
42 VRAMP
41 VFB
40 PH1LF
39 PH2LF
38 FBI/SCC
37 HOUT
36 HOSC
35 XTAL2
34 XTAL1
33 DET
32 XTALOUT
31 BYO
30 RYO
29 RYI
28 BYI
27 HUE
TDA8362

Pinning diagram

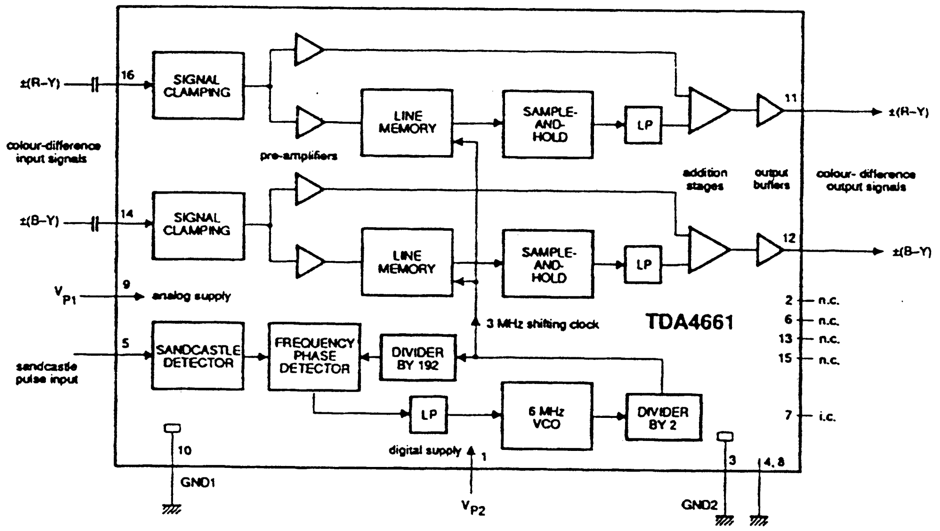
TDA4661 (IC241)
baseband delay line

FEATURES

- Two comb filters, using the switched-capacitor technique, for one line delay time (64 µs)
- Adjustment-free application
- No crosstalk between SECAM colour carriers (diaphoty)
- Handles negative or positive colour-difference input signals
- Clamping of AC-coupled input signals (±(R-Y) and ±(B-Y))
- VCO without external components
- 3 MHz internal clock signal derived from a 6 MHz VCO, line-locked by the sandcastle pulse (64 µs line)
- Sample-and-hold circuits and low-pass filters to suppress the 3 MHz clock signal
- Addition of delayed and non-delayed output signals
- Output buffer amplifiers
- Comb filtering functions for NTSC colour-difference signals to suppress cross-colour

QUICK REFERENCE DATA

SYMBOL	PARAMETER	MIN.	TYP.	MAX.	UNIT
V_{P1}	analog supply voltage (pin 9)	4.5	5	6	V
V_{P2}	digital supply voltage (pin 1)	4.5	5	6	V
$I_{P\ tot}$	total supply current	-	4.7	9.4	mA
V_i	±(R-Y) input signal PAL/NTSC (peak-to-peak value, pin 16)	-	525	-	mV
	±(B-Y) input signal PAL/NTSC (peak-to-peak value, pin 14)	-	665	-	mV
	±(R-Y) input signal SECAM (peak-to-peak value, pin 16)	-	1.05	-	V
	±(B-Y) input signal SECAM (peak-to-peak value, pin 14)	-	1.33	-	V
G_V	gain V_O / V_i of colour-difference output signals				
	V_{11} / V_{16} for PAL and NTSC	5.5	6.0	6.5	dB
	V_{12} / V_{14} for PAL and NTSC	5.5	6.0	6.5	dB
	V_{11} / V_{16} for SECAM	-0.5	0	+0.5	dB
	V_{12} / V_{14} for SECAM	-0.5	0	+0.5	dB


±(R-Y)
16
colour-difference input signals
SIGNAL CLAMPING
pre-amplifiers
LINE MEMORY
SAMPLE-AND-HOLD
LP
addition stages
output buffers
11
±(R-Y)
colour-difference output signals
±(B-Y)
14
SIGNAL CLAMPING
LINE MEMORY
SAMPLE-AND-HOLD
LP
12
±(B-Y)
V_{P1}
9
analog supply
3 MHz shifting clock
TDA4661
2 n.c.
6 n.c.
13 n.c.
15 n.c.
sandcastle pulse input
5
SANDCASTLE DETECTOR
FREQUENCY PHASE DETECTOR
DIVIDER BY 192
LP
6 MHz VCO
DIVIDER BY 2
7 i.c.
10
GND1
digital supply
1
V_{P2}
3
4, 8
GND2

PINNING

SYMBOL	PIN	DESCRIPTION
V_{P2}	1	+5 V supply voltage for digital part
n.c.	2	not connected
GND2	3	ground for digital part (0 V)
i.c.	4	internally connected
SAND	5	sandcastle pulse input
n.c.	6	not connected
i.c.	7	internally connected
i.c.	8	internally connected
V_{P1}	9	+5 V supply voltage for analog part
GND1	10	ground for analog part (0 V)
$V_{O\ (R-Y)}$	11	±(R-Y) output signal
$V_{O\ (B-Y)}$	12	±(B-Y) output signal
n.c.	13	not connected
$V_{i\ (B-Y)}$	14	±(B-Y) input signal
n.c.	15	not connected
$V_{i\ (R-Y)}$	16	±(R-Y) input signal

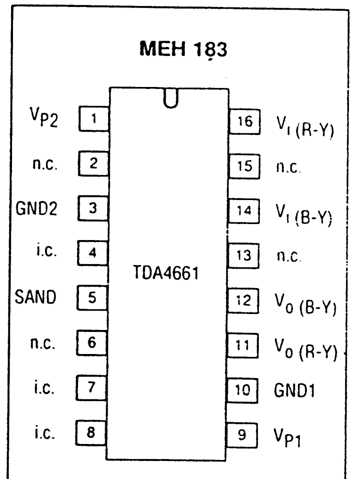

MEH 183
VP2 1
n.c. 2
GND2 3
i.c. 4
SAND 5
n.c. 6
i.c. 7
i.c. 8
TDA4661
16 Vi (R-Y)
15 n.c.
14 Vi (B-Y)
13 n.c.
12 VO (B-Y)
11 VO (R-Y)
10 GND1
9 VP1

Fig.2 Pin configuration

SECAM decoder
TDA8395 (IC251)

FEATURES

- Fully integrated filters
- Alignment free
- For use with baseband delay

GENERAL DESCRIPTION

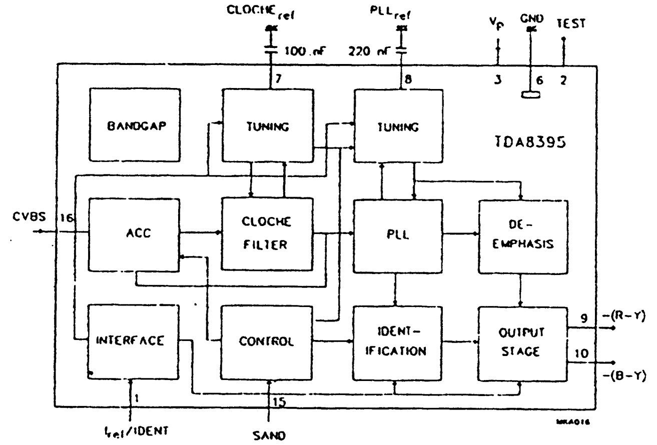
The TDA8395 is a self-calibrating, fully integrated SECAM decoder. The IC should preferably be used in conjunction with the PAL/NTSC decoder TDA8362 or TDA8366 and with the switched capacitor baseband delay circuit TDA4660, The IC incorporates HF and LF filters, a demodulator and an identification circuit (luminance is not processed in this IC). The IC needs no adjustments and very few extemal components are required. A highly stable reference frequency is required for calibration and a two-level sandcastle pulse for blanking and burst gating.

QUICK REFERENCE DATA

SYMBOL	PARAMETER	MIN.	TYP.	MAX.	UNIT
V_P	positive supply voltage; pin 3	7.2	-	8.8	V
P_{tot}	total power dissipation	-	-	220	mW
$V_{16(p-p)}$	composite video input voltage (peak-to-peak value); pin 16	-	1.0	1.5	V
$V_{O(p-p)}$	-(R-Y) output voltage amplitude (peak-to-peak value); pin 9	-	1.05	-	V
$V_{O(p-p)}$	-(B-Y) output voltage amplitude (peak-to-peak value); pin 10	-	1.33	-	V

ORDERING INFORMATION

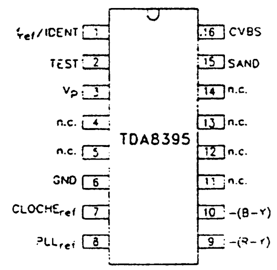
EXTENDED TYPE NUMBER	PACKAGE			
	PINS	PIN POSITION	MATERIAL	CODE
TDA8395	16	DIL	plastic	SOT38GE1


$CLOCHE_{ref}$
100 nF
PLL_{ref}
220 nF
V_P
GND
TEST
7
8
3
6
2
BANDGAP
TUNING
TUNING
TDA8395
CVBS
16
ACC
CLOCHE FILTER
PLL
DE-EMPHASIS
INTERFACE
CONTROL
IDENT-IFICATION
OUTPUT STAGE
9
-(R-Y)
10
-(B-Y)
1
15
f_{ref}/IDENT
SAND

Block diagram

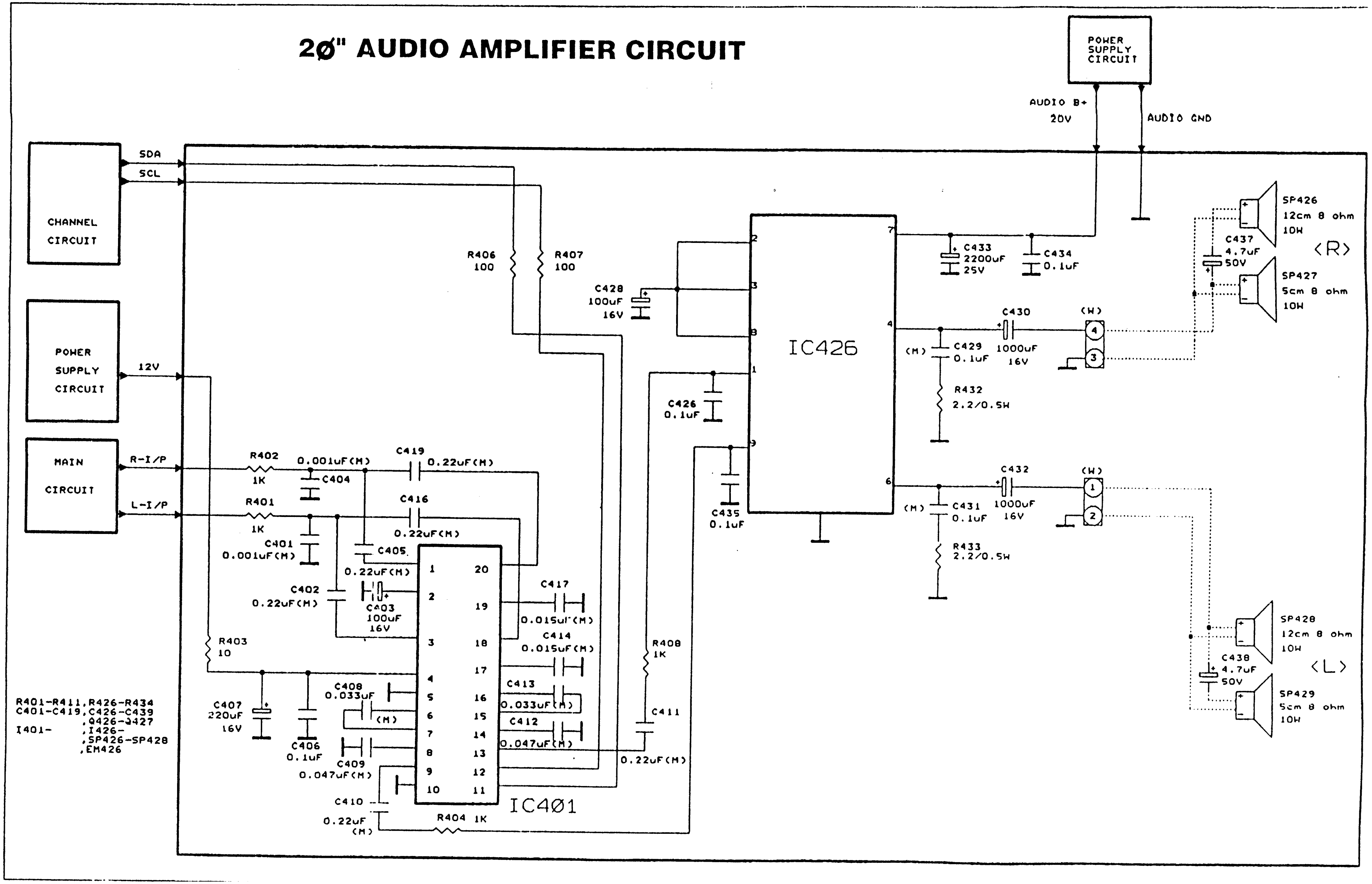
PINNING

SYMBOL	PIN	DESCRIPTION
f_{ref}/IDENT	1	reference frequency input/identification inout
TEST	2	test output
V_P	3	positive supply voltage
n.c.	4	not connected
n.c.	5	not connected
GND	6	ground
$CLOCHE_{ref}$	7	Cloche reference filter
PLL_{ref}	8	PLL reference
-(R-Y)	9	-(R-Y) output
-(B-Y)	10	-(B-Y) output
n.c.	11	not connected
n.c.	12	not connected
n.c.	13	not connected
n.c.	14	not connected
SAND	15	sandcastle pulse input
CVBS	16	video (chrominance) input


f_{ref}/IDENT 1
TEST 2
V_P 3
n.c. 4
n.c. 5
GND 6
$CLOCHE_{ref}$ 7
PLL_{ref} 8
TDA8395
16 CVBS
15 SAND
14 n.c.
13 n.c.
12 n.c.
11 n.c.
10 -(B-Y)
9 -(R-Y)

Pin configuration

20" AUDIO AMPLIFIER CIRCUIT


POWER SUPPLY CIRCUIT
AUDIO B+ 20V
AUDIO GND
CHANNEL CIRCUIT
SDA
SCL
POWER SUPPLY CIRCUIT
12V
MAIN CIRCUIT
R-I/P
L-I/P
R406 100
R407 100
R402 1K
R401 1K
0.001uF(M) C404
C401 0.001uF(M)
C419 0.22uF(M)
C416 0.22uF(M)
C405 0.22uF(M)
C402 0.22uF(M)
C403 100uF 16V
R403 10
C407 220uF 16V
C406 0.1uF
C408 0.033uF
(M)
C409 0.047uF(M)
C410 0.22uF (M)
R404 1K
C417 0.015uF(M)
C414 0.015uF(M)
C413 0.033uF(M)
C412 0.047uF(M)
C411 0.22uF(M)
R408 1K
IC401
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
C428 100uF 16V
C426 0.1uF
C435 0.1uF
IC426
2
3
8
1
9
7
4
6
C433 2200uF 25V
C434 0.1uF
C430 1000uF 16V
(M) C429 0.1uF
R432 2.2/0.5W
C432 1000uF 16V
(M) C431 0.1uF
R433 2.2/0.5W
(W)
4
3
(W)
1
2
SP426 12cm 8 ohm 10W
C437 4.7uF 50V
<R>
SP427 5cm 8 ohm 10W
SP428 12cm 8 ohm 10W
C438 4.7uF 50V
<L>
SP429 5cm 8 ohm 10W
R401-R411,R426-R434
C401-C419,C426-C439
,Q426-Q427
I401- ,I426-
,SP426-SP428
,EM426

STEREO SOUND STAGE

Video signal go out of Q181 emiter, and comes to R331, R332, R339, R340, R341. Sound is modulated over coming video signal. Required sound signal is filtered by F1329, F1330, F1332, F1333, F1334. Filtered signal is demodulated from the direction of IC327 (TDA9820). There are two demodulators in IC327. Two demodulators works if stereo signal received. One demodulator works if mono signal received. The signal goes out PIN 7 and signal goes out of PIN 8 of IC327. The signal go into PINS 7 and 8 dual processor IC901 (TDA9840). The pilot signal can be resonated by using C904, L901. This (54. 7KHZ) goes into PIN of IC901 (TDA9840). The PIN 18 of IC901 for supply voltage. EM901 is the X-TAL (10 MHz) provides clock pulse for IC901.

The PINS 11 and 12 of IC are used as sound outputs for av socket. The PINS 13 and 14 are used a sound output for audio processor chip (TDA8425). IC401 (TDA8425) controls volume, tone, balance, bass and treble from IC476. The PIN 4 is for supply voltage 12V. The PIN 13 is the left sound output, and amplified by IC426 (TDA1521). The PIN 9 is the right sound output, and amplified by IC426 (TDA1521).

TDA9820 (IC327)

Multistandard / dual channel TV FM intercarrier sound demodulator

FEATURES

- Multistandard application for sound standards M, B/G, I, D/K
- Two alignment-free PLL FM demodulators
- Four-input source selector for one of the two FM demodulators
- Automatic second sound carrier mute
- Mono and dual channel application
- Low power consumption
- Few external components

GENERAL DESCRIPTION

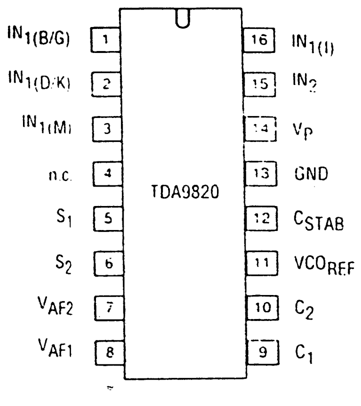
The TDA9820 is a monolithic, integrated, multistandard TV FM intercarrier sound demodulator for all FM standards. The circuit contains two separate FM demodulators using Phase-Locked Loop (PLL) reference frequency generation. The circuit has a minimum number of external components.

QUICK REFERENCE DATA

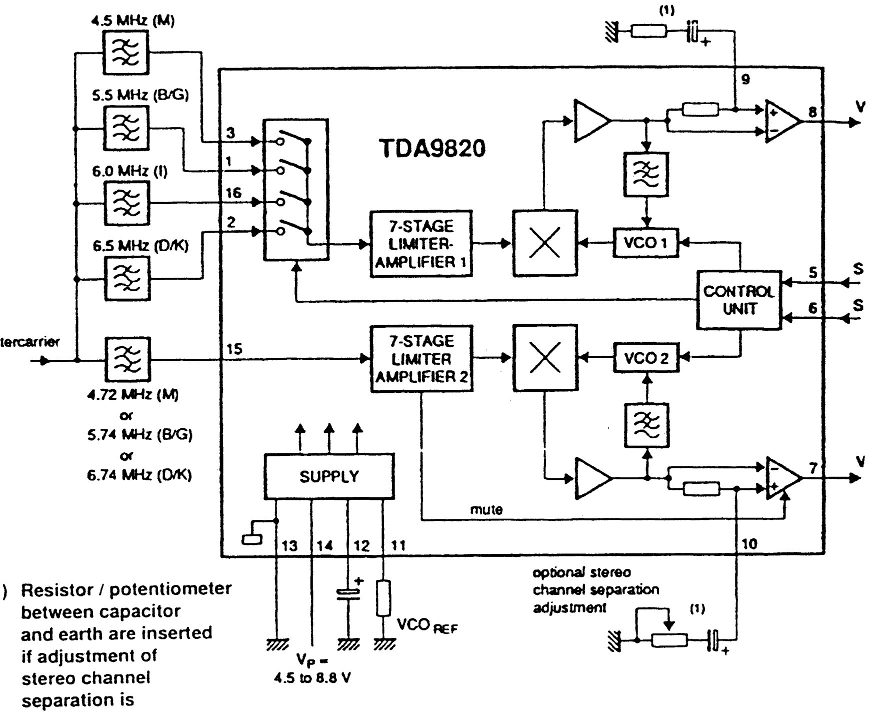
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_P	supply voltage range (pin 14)		4.5	5.0	8.8	V
I_P	supply current (pin 14)		23	30	37	mA
I_M	peak output current (pin 8 and pin 7)		–	–	± 1.5	mA
P_{tot}	power dissipation	$V_P = 5$ V	–	–	150	mW
(S+N)/N	signal-to-noise ratio (pin 8 and pin 7)	CCIR 468-3	64	68	–	dB
$\alpha_{8/7}$	crosstalk attenuation	f = 50 to 12.500 Hz	–	70	–	dB
RR	supply voltage ripple rejection (pin 7 and pin 8)	$V_{RR} < 200$ mV; f = 70 Hz	–	20	–	dB
T_{amb}	operating ambient temperature range		0	–	+ 70	°C

PINNING

SYMBOL	PIN	DESCRIPTION
$IN_{1(B/G)}$	1	first intercarrier input at 5.5 MHz
$IN_{1(D/K)}$	2	first intercarrier input at 6.5 MHz
$IN_{1(M)}$	3	first intercarrier input at 4.5 MHz
n.c.	4	not connected
S_1	5	standard switch bit 1
S_2	6	standard switch bit 2
V_{AF2}	7	second audio output voltage
V_{AF1}	8	first audio output voltage
C_1	9	decoupling capacitor
C_2	10	decoupling capacitor
VCO_{REF}	11	VCO reference
C_{STAB}	12	supply voltage stabilization
GND	13	ground
V_P	14	supply voltage
IN_2	15	second intercarrier input
$IN_{1(I)}$	16	first intercarrier input at 6.0 MHz


IN1(B/G) 1
IN1(D/K) 2
IN1(M) 3
n.c. 4
S1 5
S2 6
VAF2 7
VAF1 8
TDA9820
16 IN1(I)
15 IN2
14 VP
13 GND
12 CSTAB
11 VCOREF
10 C2
9 C1

Pin configuration


4.5 MHz (M)
5.5 MHz (B/G)
6.0 MHz (I)
6.5 MHz (D/K)
intercarrier
4.72 MHz (M)
or
5.74 MHz (B/G)
or
6.74 MHz (D/K)
TDA9820
7-STAGE LIMITER-AMPLIFIER 1
7-STAGE LIMITER AMPLIFIER 2
VCO 1
VCO 2
CONTROL UNIT
SUPPLY
mute
(1)
V
S
S
3
1
16
2
15
5
6
8
9
7
10
13
14
12
11
VCO REF
VP = 4.5 to 8.8 V
optional stereo channel separation adjustment

(1) Resistor / potentiometer between capacitor and earth are inserted if adjustment of stereo channel separation is required.

Block diagram

TDA9840 (IC901)

Stereo/dual sound processor with digital identification

FEATURES

- Level and stereo matrix adjustment possible via the I²C-bus
- Two additional Af inputs for NICAM and AM sound
- Outputs for MAIN and SCART
- AF input and AF output signals selectable via the I²C-bus
- Pilot frequency regeneration for mixer by digital PLL
- Demodulation of sound identification (117 and 274 Hz) by digital PLL and digital integration
- Information for identified transmission mode readable via the I²C-bus
- Supply voltage 5 to 8V

GENERAL DESCRIPTION

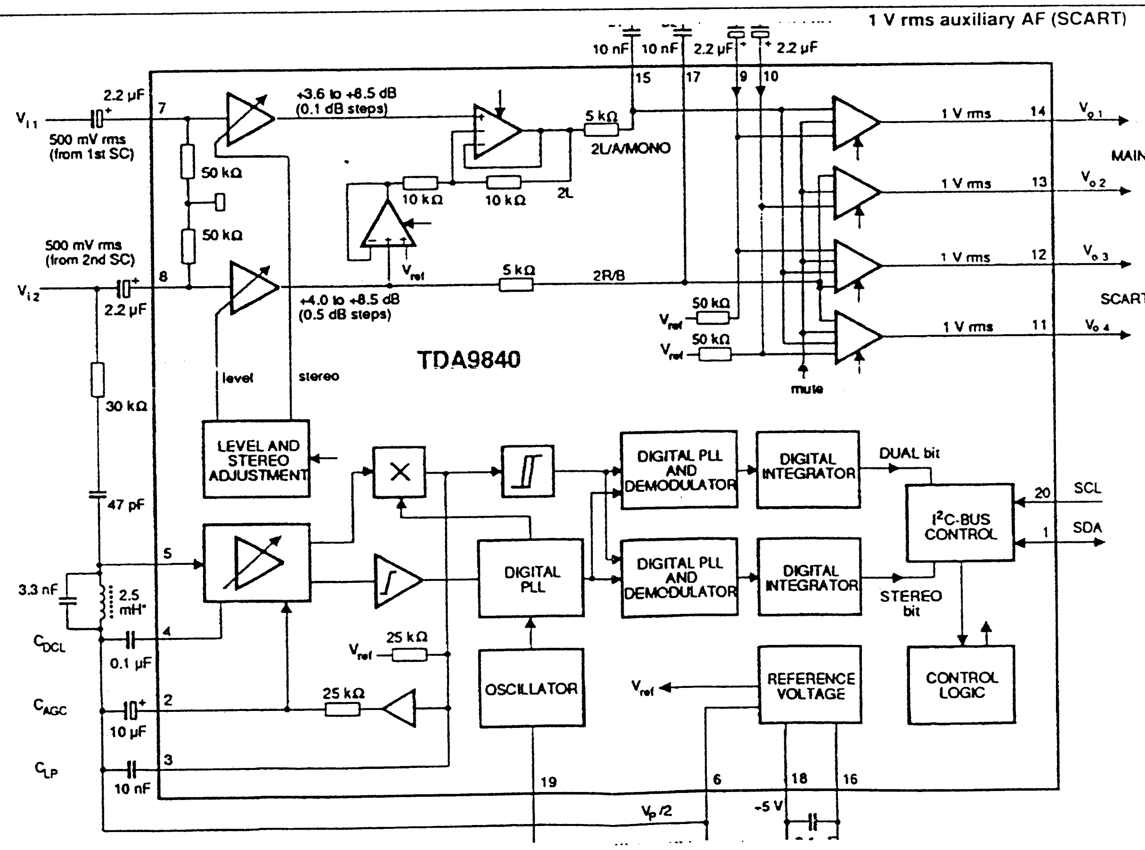
The TDA9840 is a stereo/dual sound processor for TV and VTR sets. Its digital identification ensures safe operation by using internal digital PLL filter technique with extremely small bandwidth (switching time maximum 2 s).

QUICK REFERENCE DATA

SYMBOL	PARAMETER	MIN.	TYP.	MAX.	UNIT
V_P	supply voltage (pin 18)	4.5	5	8.8	V
I_P	supply current	-	15		mA
V_i	input signal (RMS value)	-	500	-	mV
V_o	output signal (RMS value)	-	1	-	V
G_v	total signal gain	5	6	7	dB
ΔG_v	stereo control range for $V_{i\,1}$	-	+2.5	–	dB
	(0.1 dB steps)	-	-2.4		dB
	level control range for $V_{i\,2}$	-	+2.5	-	dB
	(0.5 dB steps)	-	2.0	-	dB
$V_{i\,pil}$	input sensivity of pilot frequency	5	-	-	mV
t_{sw}	switching time for change				
	to any mode	0.6	-	2	s
S/N(W)	weighted signal-to-noise ratio	72	-	-	dB
THD	total harmonic distortion	-	0.2	-	%
T_{amb}	operating ambient temperature	0	-	70	°C

ORDERING INFORMATION

EXTENDED TYPE NUMBER	PACKAGE			
	PINS	PIN POSITION	MATERIAL	CODE
TDA9840	20	DIL	plastic	SOT146
TDA9840T	20	mini-pack	plastic	SOT163A


1 V rms auxiliary AF (SCART)
10 nF
10 nF
2.2 µF
2.2 µF
15
17
9
10
Vi 1
2.2 µF
500 mV rms (from 1st SC)
7
+3.6 to +8.5 dB (0.1 dB steps)
5 kΩ
2L/A/MONO
50 kΩ
50 kΩ
10 kΩ
10 kΩ
2L
Vref
500 mV rms (from 2nd SC)
Vi 2
2.2 µF
8
+4.0 to +8.5 dB (0.5 dB steps)
5 kΩ
2R/B
50 kΩ
Vref
50 kΩ
Vref
1 V rms 14 Vo 1
MAIN
1 V rms 13 Vo 2
1 V rms 12 Vo 3
SCART
1 V rms 11 Vo 4
mute
TDA9840
level
stereo
30 kΩ
47 pF
LEVEL AND STEREO ADJUSTMENT
DIGITAL PLL AND DEMODULATOR
DIGITAL INTEGRATOR
DUAL bit
20 SCL
1 SDA
I²C-BUS CONTROL
5
3.3 nF
2.5 mH*
CDCL
0.1 µF
4
DIGITAL PLL
DIGITAL PLL AND DEMODULATOR
DIGITAL INTEGRATOR
STEREO bit
25 kΩ
Vref
CAGC
2
10 µF
25 kΩ
OSCILLATOR
Vref
REFERENCE VOLTAGE
CONTROL LOGIC
CLP
3
10 nF
19
6
18
16
Vp/2
-5 V

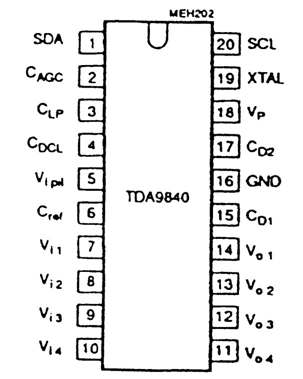
* Q_{BP}=40 to 50 or Q_{BP} = 10 for alignment-free application with loss in sensitivity of about 4 dB

Block diagram, test and application circuit.

TDA9840
Stereo/dual sound processor with digital identification

PINNING

SYMBOL	PIN	DESCRIPTION
SDA	1	I^2C-bus data line
C_{AGC}	2	AGC capacitor of pilot frequency amplifier
C_{LP}	3	low-pass capacitor
C_{DCL}	4	DC loop capacitor
$V_{i\,pll}$	5	pilot frequency input
C_{ref}	6	capacitor of reference voltage ($V_P/2$)
$V_{i\,1}$	7	AF input 1 signal (from 1st sound carrier)
$V_{i\,2}$	8	AF input 2 signal (from 2nd sound carrier)
$V_{i\,3}$	9	AF input 3 signal (additional input)
$V_{i\,4}$	10	AF input 4 signal (additional input)
$V_{o\,4}$	11	AF output 4 signal
$V_{o\,3}$	12	AF output 3 signal
$V_{o\,2}$	13	AF output 2 signal
$V_{o\,1}$	14	AF output 1 signal
C_{D1}	15	50 µs de-emphasis capacitor of channel 1
GND	16	ground (0 V)
C_{D2}	17	50 µs de-emphasis capacitor of channel 2
V_P	18	supply voltage (+5 to +8 V)
XTAL	19	10 MHz crystal
SCL	20	I^2C-bus clock line


MEH202
SDA 1
CAGC 2
CLP 3
CDCL 4
Vi pll 5
Cref 6
Vi 1 7
Vi 2 8
Vi 3 9
Vi 4 10
TDA9840
20 SCL
19 XTAL
18 VP
17 CD2
16 GND
15 CD1
14 Vo 1
13 Vo 2
12 Vo 3
11 Vo 4

Pin configuration

TDA8425
(IC401)
Hi-Fi Stereo Audio Processor; I²C-bus

GENERAL DESCRIPTION

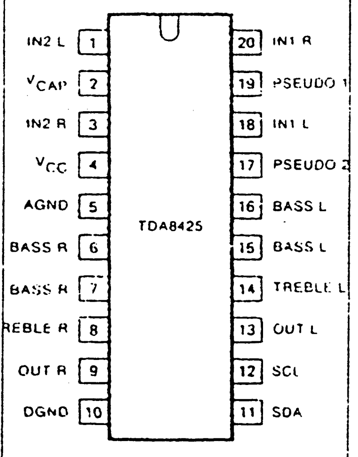
The TDA8425 is a monolithic bipolar integrated stereo sound circuit with a loudspeaker channel facility, digitally controlled via the I²C-bus for application in Hi-Fi audio and television sound.

FEATURES

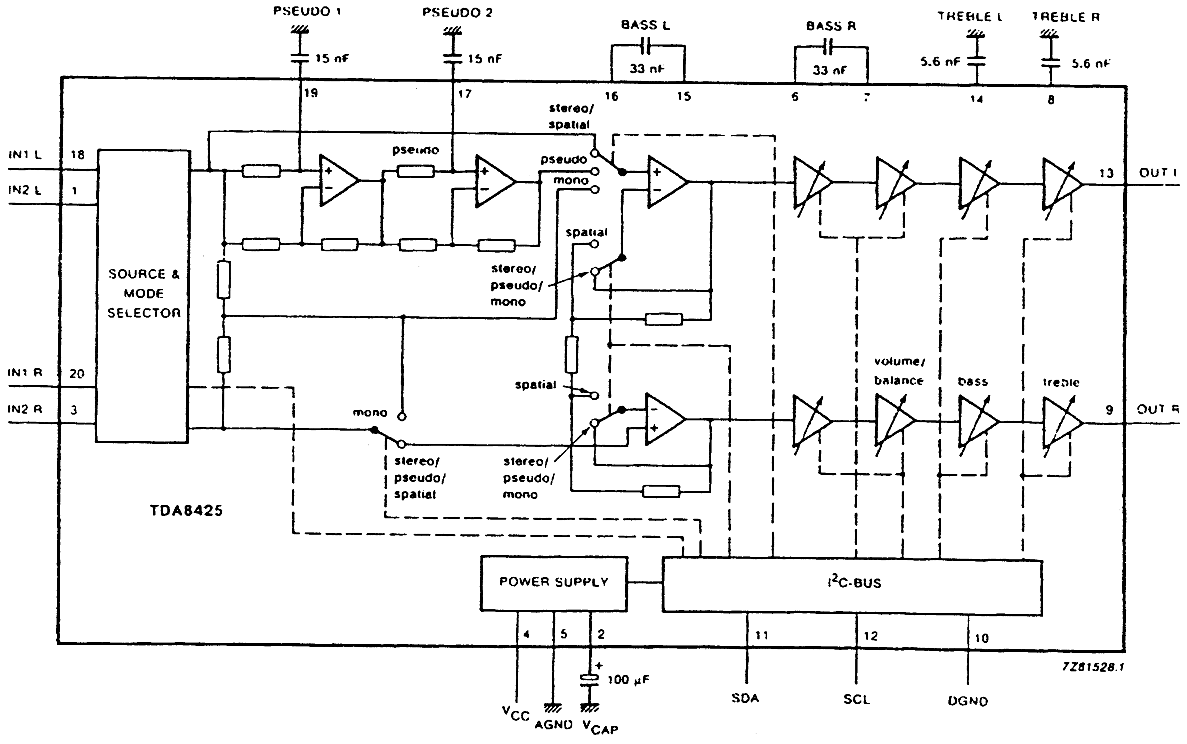
- Source and mode selector for two stereo channels
- Pseudo stereo, spatial stereo, linear stereo and forced mono switch
- Volume and balance control
- Bass, treble and mute control
- Power supply with power-on reset

QUICK REFERENCE DATA

parameter	symbol	min.	typ.	max.	unit
Supply voltage (pin 4)	V_{CC}	10.8	12.0	13.2	V
Input signal handling	V_I	2	-	-	V
Input sensitivity					
full power at the output stage	V_i	-	300	-	mV
Signal plus noise-to-noise ratio	(S+N)/N	-	86	-	dB
Total harmonic distortion	THD	-	0.05	-	%
Channel separation	α	-	80	-	dB
Volume control range	G	-64	-	6	dB
Treble control range	G	-12	-	12	dB
Bass control range	G	-12	-	15	dB


IN2 L 1
VCAP 2
IN2 R 3
VCC 4
AGND 5
BASS R 6
BASS R 7
REBLE R 8
OUT R 9
DGND 10
TDA8425
20 IN1 R
19 PSEUDO 1
18 IN1 L
17 PSEUDO 2
16 BASS L
15 BASS L
14 TREBLE L
13 OUT L
12 SCL
11 SDA

Pinning diagram


PSEUDO 1
15 nF
19
PSEUDO 2
15 nF
17
BASS L
33 nF
16
15
BASS R
33 nF
6
7
TREBLE L
5.6 nF
14
TREBLE R
5.6 nF
8
IN1 L 18
IN2 L 1
IN1 R 20
IN2 R 3
SOURCE & MODE SELECTOR
pseudo
stereo/ spatial
pseudo
mono
spatial
stereo/ pseudo/ mono
mono
stereo/ pseudo/ spatial
spatial
stereo/ pseudo/ mono
volume/ balance
bass
treble
13 OUT L
9 OUT R
TDA8425
POWER SUPPLY
I²C-BUS
4
5
2
100 µF
VCC
AGND
VCAP
11 SDA
12 SCL
10 DGND
7Z81528.1

Block diagram

TDA1521
(IC426)
2X12 W Hi-Fi Audio Power Amplifier

GENERAL DESCRIPTION

The TDA1521/TDA 1521Q is a dual Hi-Fi audio power amplifier encapsulated in a 9-lead plastic power package. The device is especially designed for mains fed applications (e.g. stereo tv sound and stereo radio).

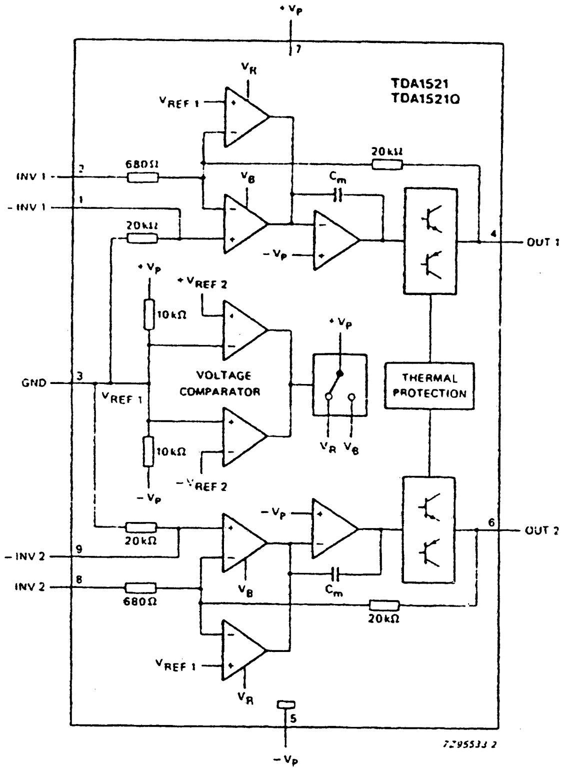
FEATURES

- Requires very few external components
- Input muted during power on and off (no-switch-off clicks)
- Low offset voltage between output and ground
- Excellent gain balance between channels
- Hi-Fi according to IEC 268 and DIN 45500
- Short-circuit-proof

QUICK REFERENCE DATA

Stereo applications

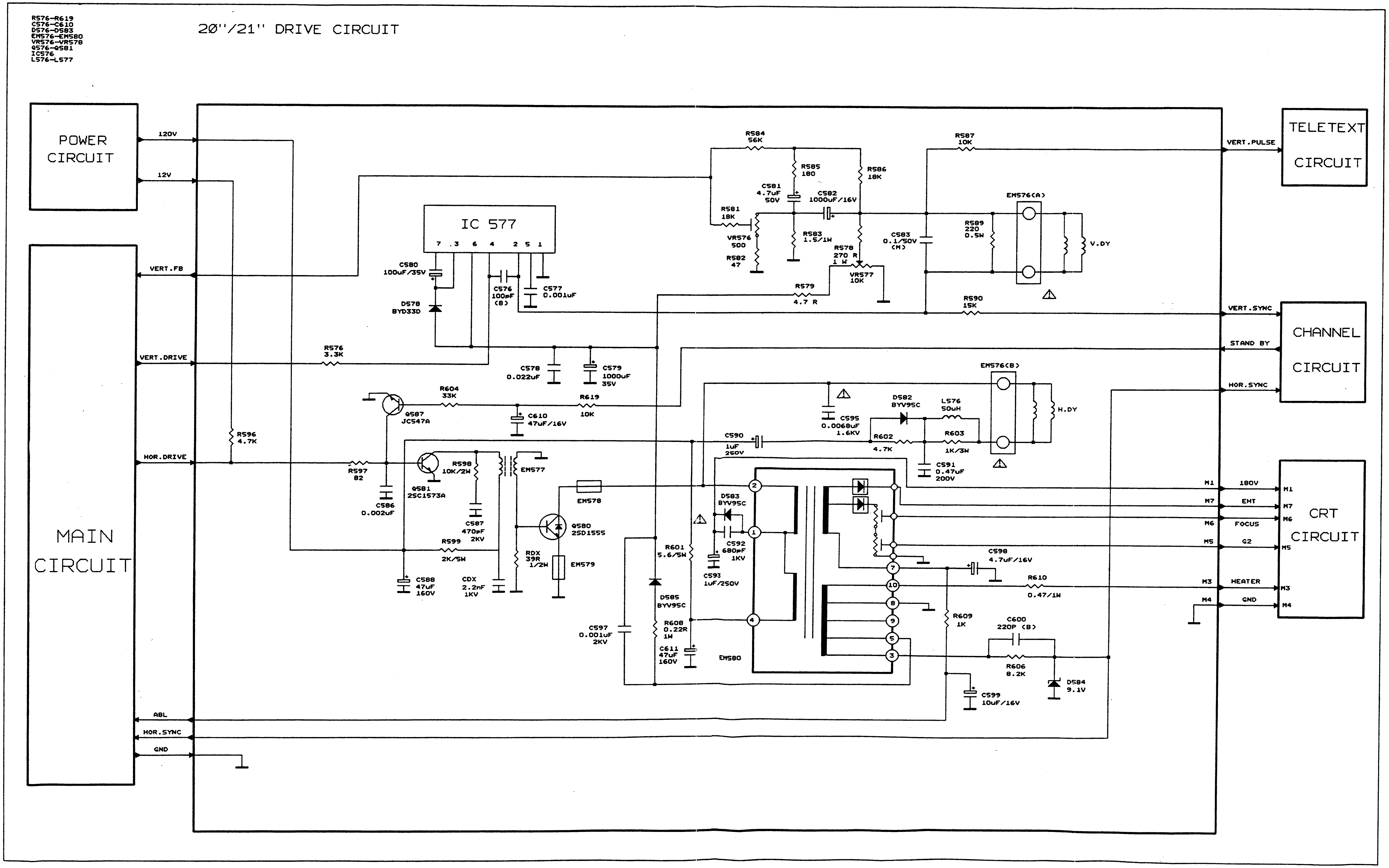
Supply voltage range	Vp	± 7.5 to	± 20.0 V
Output power at THD =0,5%, Vp = ± 16 V	Po	typ.	12 W
Voltage gain	G_V	typ.	30 dB
Gain balance between channels	ΔG_V	typ.	0.2 dB
Ripple rejection	SVRR	typ.	60 dB
Channel separation	α	typ.	70 dB
Voise output voltage	$V_{no\ (rms)}$	typ.	70 μV


+Vp
7
TDA1521
TDA1521Q
V_R
$V_{REF\ 1}$
20kΩ
680Ω
INV 1
2
V_B
C_m
-INV 1
1
20kΩ
-Vp
4
OUT 1
+Vp
$+V_{REF\ 2}$
10kΩ
+Vp
GND
3
$V_{REF\ 1}$
VOLTAGE COMPARATOR
THERMAL PROTECTION
V_R V_B
10kΩ
$-V_{REF\ 2}$
-Vp
-Vp
6
OUT 2
20kΩ
-INV 2
9
INV 2
8
680Ω
V_B
C_m
20kΩ
$V_{REF\ 1}$
V_R
5
-Vp
7Z95533 2

PINNING DIAGRAM

PINNING

1	-INV1	non-inverting input 1
2	INV1	inverting input 1
3	GND	ground (symmetrical) 1/2 V_P (asymetrical)
4	OUT 1	output 1
5	-Vp	negative supply (symmetrical) ground (symmetrical)
6	OUT 2	output 2
7	+Vp	positive supply
8	INV2	inverting input 2
9	-INV2	non-inverting input 2


R576-R619
C576-C610
D576-D583
EM576-EM580
VR576-VR578
Q576-Q581
IC576
L576-L577
20"/21" DRIVE CIRCUIT
POWER CIRCUIT
120V
12V
MAIN CIRCUIT
VERT.FB
VERT.DRIVE
HOR.DRIVE
ABL
HOR.SYNC
GND
IC 577
7 3 6 4 2 5 1
C580 100uF/35V
D578 BYD33D
C576 100pF (B)
C577 0.001uF
C578 0.022uF
C579 1000uF 35V
R576 3.3K
R584 56K
R585 180
R586 18K
C581 4.7uF 50V
C582 1000uF/16V
R581 18K
VR576 500
R582 47
R583 1.5/1W
R578 270 R 1 W
VR577 10K
R579 4.7 R
R587 10K
C583 0.1/50V (M)
R589 220 0.5W
EM576(A)
V.DY
R590 15K
TELETEXT CIRCUIT
VERT.PULSE
CHANNEL CIRCUIT
VERT.SYNC
STAND BY
HOR.SYNC
Q587 JC547A
R604 33K
C610 47uF/16V
R619 10K
R596 4.7K
R597 82
C586 0.002uF
Q581 2SC1573A
R598 10K/2W
EM577
C587 470pF 2KV
R599 2K/5W
C588 47uF 160V
CDX 2.2nF 1KV
Q580 2SD1555
RDX 39R 1/2W
EM579
EM578
EM576(B)
H.DY
C595 0.0068uF 1.6KV
D582 BYV95C
L576 50uH
C590 1uF 250V
R602 4.7K
R603 1K/3W
C591 0.47uF 200V
D583 BYV95C
C592 680pF 1KV
C593 1uF/250V
R601 5.6/5W
D585 BYV95C
R608 0.22R 1W
C611 47uF 160V
C597 0.001uF 2KV
EM580
2 1 4 7 10 8 9 5 3
C598 4.7uF/16V
R610 0.47/1W
R609 1K
C600 220P (B)
R606 8.2K
D584 9.1V
C599 10uF/16V
M1 M7 M6 M5 M3 M4
180V
EHT
FOCUS
G2
HEATER
GND
CRT CIRCUIT

DRIVE CIRCUIT

Vertical Output Stage

The vertical pulses that come from pin 43 of IC181 are amplified by IC577 and given deflection coils via EM576 (A)

TA8403 (LA7830)

(IC577)

TENTATIVE
VERTICAL DEFLECTION
OUTPUT CIRCUIT FOR COLOR
TELEVISION

FEATURES

- High output current
- Low power consumption provided by pump-up circuit
- Small number of external components required

MAXIMUM RATINGS (TA=25°C)

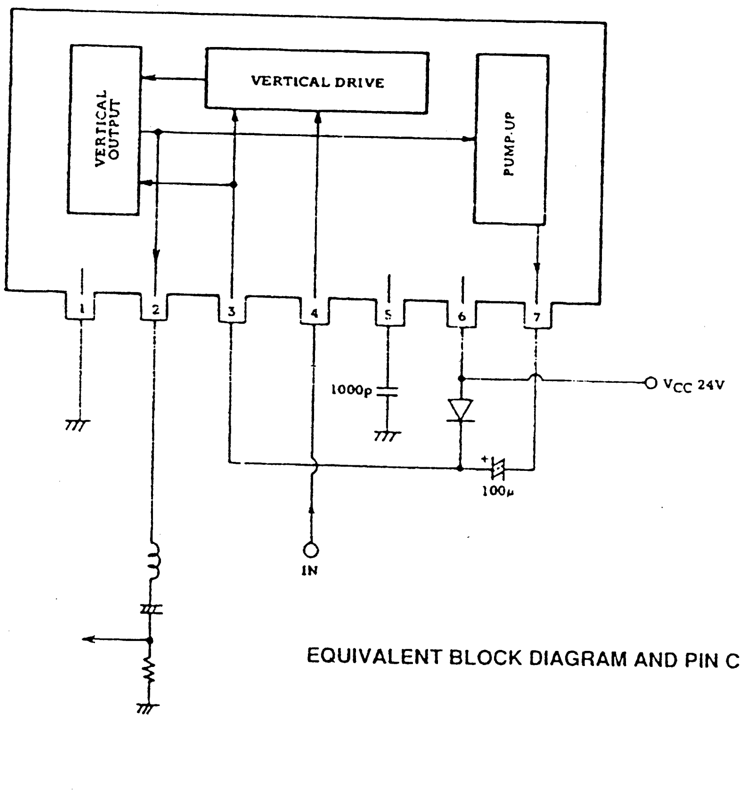
ITEM	SYMBOL	RATING	UNIT
Power Supply Voltage	V_{CC}	30	V
Vertical Output Supply Voltage	V_{vt}	60	V
Power Dissipation	P_D	15	W
Operating Temperature	T_{opr}	-20 to 85	°C
Storage Temperature	T_{stg}	-55 to 150	°C

RECOMMENDED OPERATING CONDITIONS (TA=25°C)

ITEM	SYMBOL	MEASURING CONDITIONS	MINI-MUM	TYPI-CAL	MAXI-MUM	UNIT
Power Supply Voltage	V_{CC}		—	24	27	V
Deflection Output Current	I2p-p	Peak to peak	—	—	1.8	Ap-p

ELECTRICAL CHARACTERISTICS (TA=25°C)

ITEM	SYMBOL	MEASURING CONDITIONS	MINI-MUM	TYPI-CAL	MAXI-MUM	UNIT
Output Transistor Saturation Voltage	$V_V(sat)1.$	V_{CC} = 24V	0.3	0.5	1.0	V
	$V_V(sat)2.$	V_{CC} = 24V	1.0	1.8	3.6	V
Pump-up Output Tr. Saturation Voltage	$V_P(sat)1.$	V_{CC} = 24V	1.0	2.0	3.0	V
	$V_P(sat)2.$	V_{CC} = 24V	0.3	0.8	1.6	V
Quiescent Current	IB	V_{CC} = 24V	10.0	15.0	30.0	mA
Center Voltage	Vcenter	V_{CC} = 24V	10.0	12.0	14.0	V



1. GND
2. Vertical Output
3. Vertical Output Power Supply
4. Input
5. Phase Compensation
6. Supply Voltage
7. Pump-up Outout

EQUIVALENT BLOCK DIAGRAM AND PIN CONFIGURATION

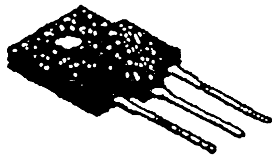
BUH515D (2SD1555)
(Q580)

CRT HORIZONTAL DEFLECTION HIGH VOLTAGE NPN FASTSWITCHING TRANSISTOR

- High breakdown voltage capability
- Fully insulated package for easy mounting
- Low saturation voltage
- High switching speed
- Complete characterization of power losses and switching times as a function of negative base current for optimum drive

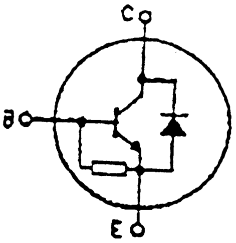
APPLICATIONS:

- Horizontal deflection stage in standard and high resolution dis-plays for TV's and monitors



ISOWATT218

INTERNAL SCEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CS0}	Collector-Base Voltage ($I_E = 0$)	1500	V
V_{CE0}	Collector-Emitter Voltage ($I_B = 0$)	700	V
V_{E90}	Emitter-Base Voltage ($I_c = 0$)	5	V
I_C	Collector Current	8	A
I_{CM}	Collector Peak Current ($t_p < 5$ ms)	15	A
I_B	Base Current	5	A
I_{BM}	Base Peak Current ($t_p < 5$ ms)	8	A
P_{tot}	Total Dissipation at Tc = 25°C	80	W
T_{ztg}	Storage Temperature	-65 to 150	°C
T_1	Max. Operating Junction Temperature	150	°C

THERMAL DATA

$R_{thj\text{-}case}$	Thermal Resistance Junction-case	Max	2.08	°C/W

ELECTRICAL CHARACTERISTICS (Tcase = 25°C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CES}	Collector Cut-off Current (V_{BE} = 0)	V_{CE} = 1500 V V_{CE} = 1500 V T_j = 125°C			1 2	mA mA
I_{EBO}	Emitter Cut-off Current (I_C = 0)	V_{EB} = 5 V			100	μA
$V_{CEO(sus)}$	Collector-Emitter Sustaining Voltage	I_C = 100 mA	700			V
V_{EBO}	Emitter-base voltage (I_C = 0)	I_E = 10 mA	10			V
$V_{CE(sat)}$*	Collector-Emitter Saturation Voltage	I_C = 5 A I_B = 1.25 A			1.5	V
$V_{BE(sat)}$*	Base-Emitter Saturation Voltage	I_C = 5 A I_B = 1.25 A			1.3	V
h_{FE}*	DC Current Gain	I_C = 5 A V_{CE} = 5 V Ic = 5 A V_{CE} = 5 V Tj = 100°C	6 4			
ts t_f	RESISTIVE LOAD Storage Time Fall Time	Vcc = 400 V I_C = 5 A I_{B1} = 1.25 A I_{B2} = 2.5 A		2.7 190	3.9 280	μs ns
ts t_f	INDUCTIVE LOAD Storage Time Fall Time	I_C = 5 A f = 15625 Hz I_{B1} = 1.25 A I_{B2} = 2.5 A $V_{ceflyback} = 1050 \sin \left\{ \frac{\pi}{10} 10^6 \right\} t$ V		2.3 3.50		μs ns
ts tf	INDUCTIVE LOAD Storage time Fall Time	I_C = 5 A F = 31250 Hz I_{B1} = 1.25 A I_{B2} = 2.5A $V_{ceflyback} = 1200 \sin \left\{ \frac{\pi}{5} 10^6 \right\} t$ V		2.3 200		μs ns

* *Pulsed: Pulse duration = 300 μs, duty cycle 1.5%*

TELETEXT CIRCUIT

Teletext stage consist of SAA5243, SAA5231 and GM76C88AL15 (8K8SRAM)
Note: SAA5345 should be used instead of SAA5243 and 8K8 SRAM). Video signal goes to PIN 27 of IC (SAA5231). Analog signal translated to digital signal by SAA5231. PINS 18 and 20 IC730 oscillator input-output and operates with a xtal (EM727) 6MHz. IC728 (SAA5243P) is teletext decoder. PIN 19 of teletext decoder is SCL (Serial Clock) and PIN 20 is SDA (Serialdata) control. Text data in video signal that comes to IC728 (SAA5243) are separated in IC728 and R, G, B signal are produced by IC728. RGB signal go out from IC728 via pins 13, 14, 15. PIN 17 of IC is for fast blanking. PIN 8 is used by adjusting vertical deflection current. Therefore a vision can be obtained without flicker.

PCF84C81 (IC727) = This IC is a uP and converts SDA and SCL datas for 5243 to a form so that SAA5243 can evaluate.

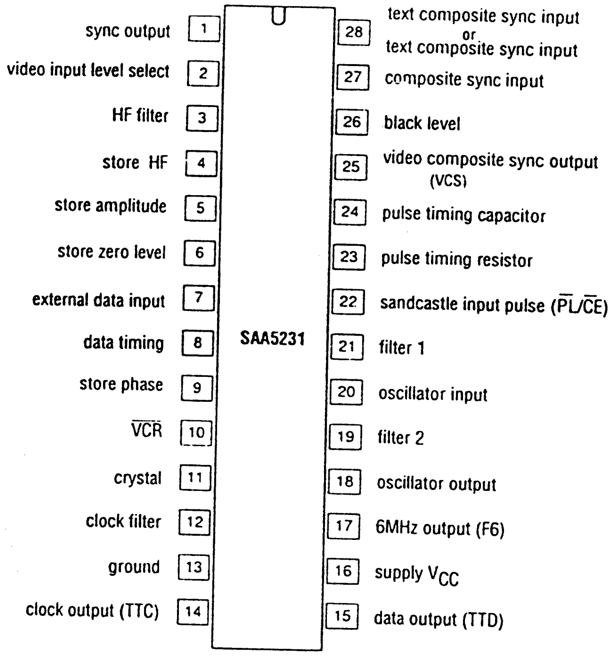
8K8 SRAM (IC729) = This IC is a static ram and its memory 4 page at the same time for fastext system. When a new page is selected, memory IC changes its memory according to new page.

SAA5231 (IC730)

Teletext video processor

GENERAL DESCRIPTION

The SAA5231 is a bipolar integrated circuit intended as a successor to the SAA5030. It extracts Teletext Data from the video signal, regenerates Teletext Clock and synchronizes the text display to the television syncs. The integrated circuit is intended to work in conjunction with CCT (Computer Controlled Teletext), EUROM or other compatible devices.


sync output 1
video input level select 2
HF filter 3
store HF 4
store amplitude 5
store zero level 6
external data input 7
data timing 8
store phase 9
VCR 10
crystal 11
clock filter 12
ground 13
clock output (TTC) 14
SAA5231
28 text composite sync input or text composite sync input
27 composite sync input
26 black level
25 video composite sync output (VCS)
24 pulse timing capacitor
23 pulse timing resistor
22 sandcastle input pulse (PL/CE)
21 filter 1
20 oscillator input
19 filter 2
18 oscillator output
17 6MHz output (F6)
16 supply VCC
15 data output (TTD)

FEATURES

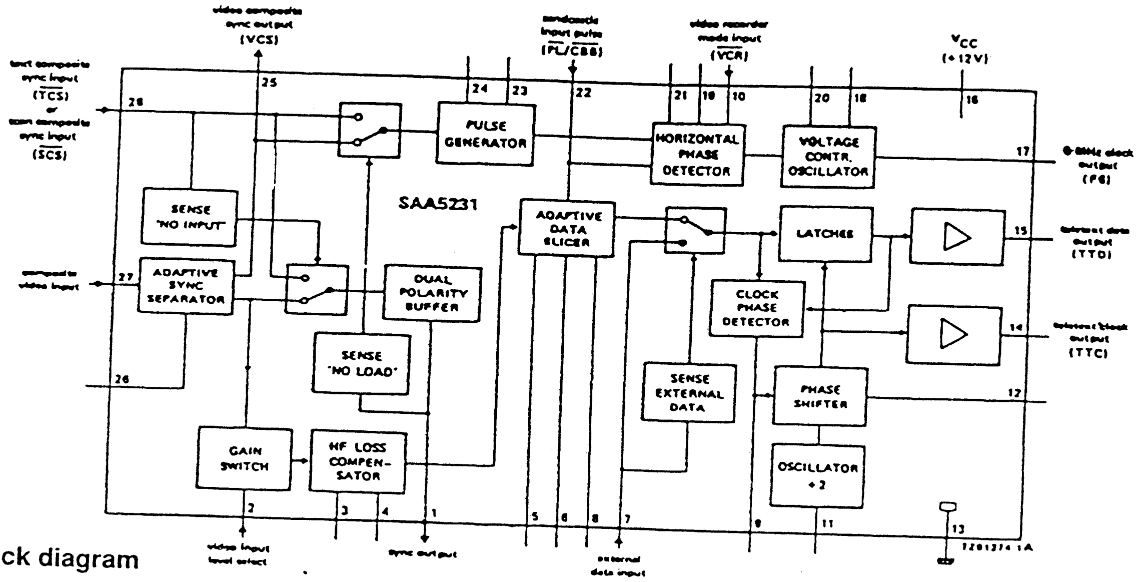
- Adaptive data slicer
- Data clock regenerator
- Adaptive sync separator, horizontal phase detector and 6 MHz VCO forming display phase locked loop (PLL)

QUICK REFERENCE DATA

Supply voltage (pin 16)	V_{CC}	typ.	12 V
Supply current (pin 16)	I_{CC}	typ.	70 mA
Video input amplitude (pin 27) (peak-to-peak value)			
pin 2 LOW	$V_{27-13(p-p)}$	typ.	1 V
pin 2 HIGH	$V_{27-13(pp)}$	typ.	2,5V
Storage temperature range	T_{stg}		-20 to ± 125 °C
Operating ambient temperature range	T_{amb}		0 to + 70 °C

PACKAGE OUTLINE

28-lead dual in-line; plastic (SOT117).


video composite sync output
(VCS)
sandcastle input pulse
(PL/CBB)
video recorder mode input
(VCR)
V_{CC}
(+12V)
text composite sync input
(TCS)
or
scan composite sync input
(SCS)
28
25
24
23
22
21
19
10
20
18
16
PULSE GENERATOR
HORIZONTAL PHASE DETECTOR
VOLTAGE CONTR. OSCILLATOR
17
6 MHz clock output
(F6)
SAA5231
SENSE 'NO INPUT'
ADAPTIVE DATA SLICER
LATCHES
15
teletext data output
(TTD)
composite video input
27
ADAPTIVE SYNC SEPARATOR
DUAL POLARITY BUFFER
CLOCK PHASE DETECTOR
14
teletext clock output
(TTC)
SENSE 'NO LOAD'
SENSE EXTERNAL DATA
PHASE SHIFTER
12
26
GAIN SWITCH
HF LOSS COMPEN-SATOR
OSCILLATOR ÷2
2
3
4
1
5
6
8
7
9
11
13
7Z81274 1A
video input level select
sync output
external data input

Block diagram

SAA5243 (IC728)

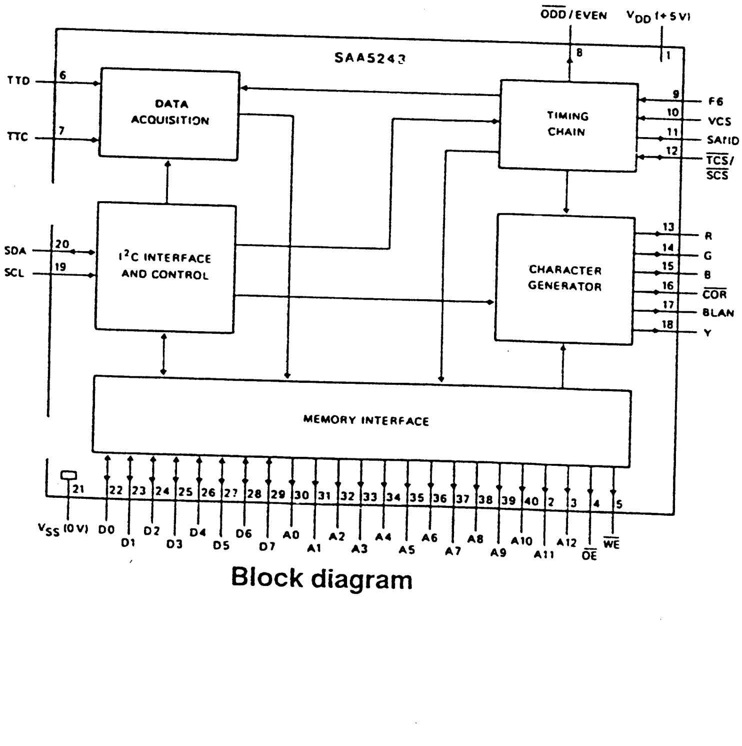
Enhanced Computer Controlled Teletext Circuit (ECCT)

GENERAL DESCRIPTION

The SAA5243 is a MOS N-channel integrated circuit which performs all the digital logic functions of a 625-line World System Teletext decoder. It operates in conjunction with the teletext video processor SAA5231, standard static RAMs and is controlled via the 2-wire I²C bus. The device can be used to provide videotex display conforming to a serial

FEATURES

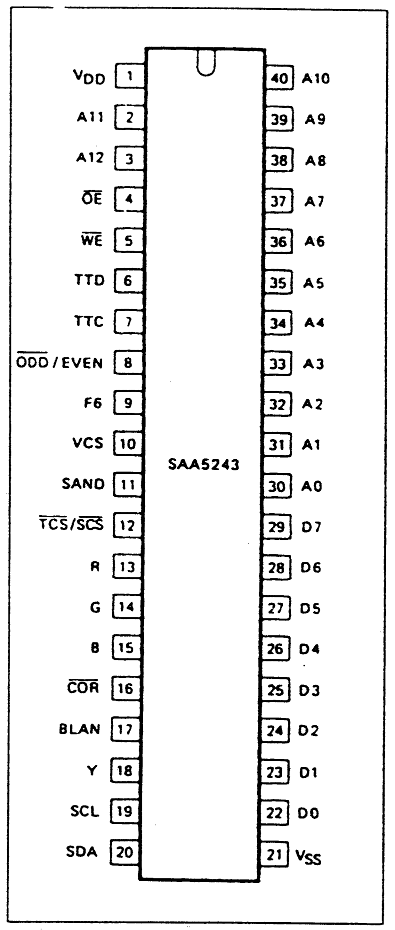
- Microcomputer controlled for flexibility
- High quality flicker-free display using a 12x10 character matrix
- Field flyback (lines 2 to 22), or full channel (all lines) data acquisition
- Up to four simultaneous page requests enabling acqisition during one magazine cycle
- Direct interface up to 8 K bytes static RAM
- Automatic language section of up to seven different languages
- 25th display row for software generated status messages
- Cursor control for videotex-telesofware
- 7-bits parity or 8-bit data acquisition
- Extension packet reception option
- Standard I²C bus slave transceiver (slave address 0010001)
- Single 5 volt power supply
- Mask programmable character sets
- Slave sync mode operation
- Odd/even field output for de-interlaced displays


ODD/EVEN
V_{DD} (+5V)
SAA5243
8
1
TTD
6
TTC
7
DATA ACQUISITION
TIMING CHAIN
9
F6
10
VCS
11
SAND
12
TCS/SCS
SDA
20
SCL
19
I²C INTERFACE AND CONTROL
CHARACTER GENERATOR
13
R
14
G
15
B
16
COR
17
BLAN
18
Y
MEMORY INTERFACE
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
2
3
4
5
V_{SS} (0V)
D0
D1
D2
D3
D4
D5
D6
D7
A0
A1
A2
A3
A4
A5
A6
A7
A8
A9
A10
A11
A12
OE
WE

Block diagram

PINNING

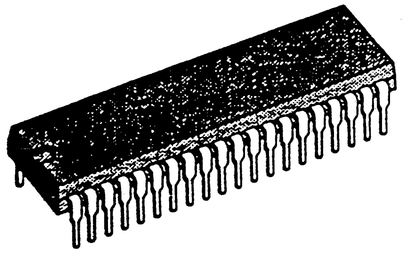
1	V_{DD}	**Power supply:** + 5 V power supply pin.
2,3,40	A11, A12, A10	**Chapter Address:** three outputs that select which 1 Kbyte chapter of external RAM is being accessed for any read or write cycle.
4	$\overline{OE}$	**Output Enable:** active low output signal used to control the reading of the external RAM. It occurs continuously at a 1 MHz rate.
5	$\overline{WE}$	**Write Enable:** active low output signal used to control the writing of data to the external RAM. It occurs for a valid write cycle only and is interleaved with the read cycles.
6	TTD	**Teletext Data:** input from the SAA5231 Video Input Processor (VIP2). It is clamped to V_{SS} for 4 to 8 µs of each television line to maintain the correct c.d.c. level following the external a.c. coupling.
7	TTC	**Teletext Clock:** 6,9375 MHz clock input from the SAA5231. It is internally a.c. coupled to an active clamp input buffer.
8	$\overline{ODD}$/EVEN	**Odd/Even:** for interlaced mode, the output changes once per field at 2 µs before the end of line 311 (624). The output is high for even fields and low for odd fields.
9	F6	**Character display clock:** 6 MHz clock input from the SAA5231. It is internally a.c. coupled to an active clamp input buffer.
10	VCS	**Video Composite Sync:** input from the SAA5231 derived from the incoming video signal. Sync pulses are active high.
11	SAND	**Sandcastle:** 3-level sandcastle output to the SAA5231 containing the phase locking and colour burst blanking information.
12	$\overline{TCS}$/$\overline{SCS}$	**Text Composite Sync/Scan Composite Sync:** as an output an active low composite sync waveform (TCS) with interlaced or noninterlaced format which is fed to the SAA5231 to drive the display timebases. Alternatively this pin can act as an input for an active low composite sync waveform (SCS) so 'slave' the display timing circuits.
13, 14, 15	R, G, B	**Red, Green, Blue:** these 3 open drain out puts are the character video signals to the television display circuits. They are active high and contain character and background information.
16	$\overline{COR}$	**Contrast Reduction:** open drain, active low output which allows selective contrast reduction of the television picture to enhance a mixed mode display.
17	BLAN	**Blanking:** open drain, active high output which controls the blanking of the television picture for a normal text display and for a mixed display.
18	Y	**Character foreground:** open drain, active high video output signal containing all the foreground information displayed on the television screen (e.g. for driving a display printer).
19	SCL	**Serial Clock:** input signal which is the I^2C bus clock from the microcontroller.
20	SDA	**Serial Data:** is the I^2C bus data line. It is an input/output function with an open drain output.
21	V_{SS}	**Ground:** 0 volts.
22-29	D0-D7	**8 RAM data lines:** 3-state input/output pins which carry the data bytes to and from the external RAM.
30-39	A0-A9	**RAM address:** 10 output signals that determine which byte location within a 1 Kbyte chapter of external RAM is accessed for any read or write cycle.



STV5345
STV5345/H - STV5345/T
(IC728)
TELETEXT DECODER WITH 8 INTEGRATED PAGES

PRELIMINARY DATA

- Complete teletext decoder including on-chip 8 pages memory, reducing EMC radiations
- Upward software and hardware compatible with previous SGS-THOMSON's decoder SDA5243
- Direct interface to an external static ram of 8 Kbytes for up to 16 pages application
- Automatic selection of up to six national languages
- Four simultaneous page requests
- Display of the 25th status row
- Microprocessor control via an I^2C bus (slave address 0010001 R/W).
- Data acquisition available from lines 2 to 22 or from a complete field
- High quality display using a character matrix of 12 x 10 dots
- Single + 5V supply voltage
- On-chip mask programmable rom character generators
- Hcmos process



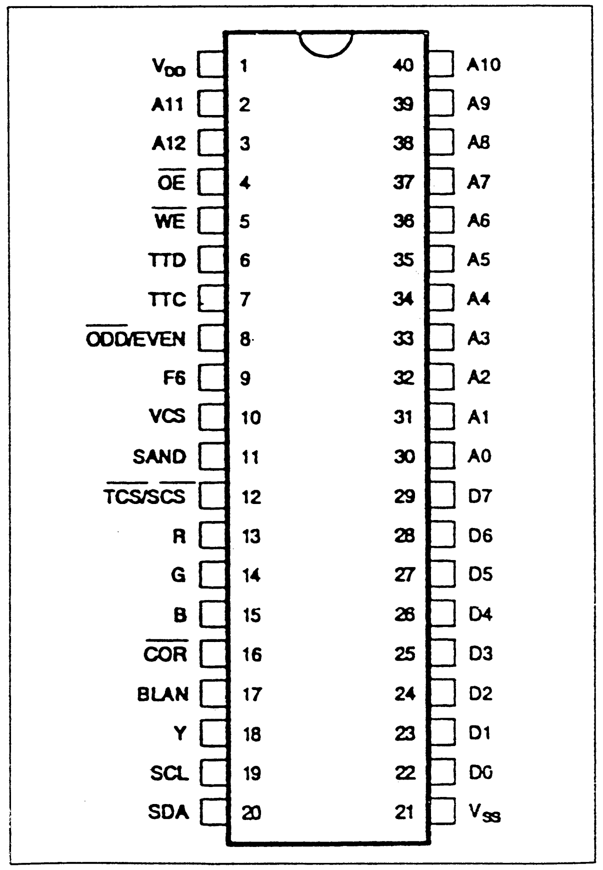
DIP40
(Plastic Package)

ORDER CODE :		
	STV5345	West European
	STV5345/H	East European
	STV5345/T	Turkish & European

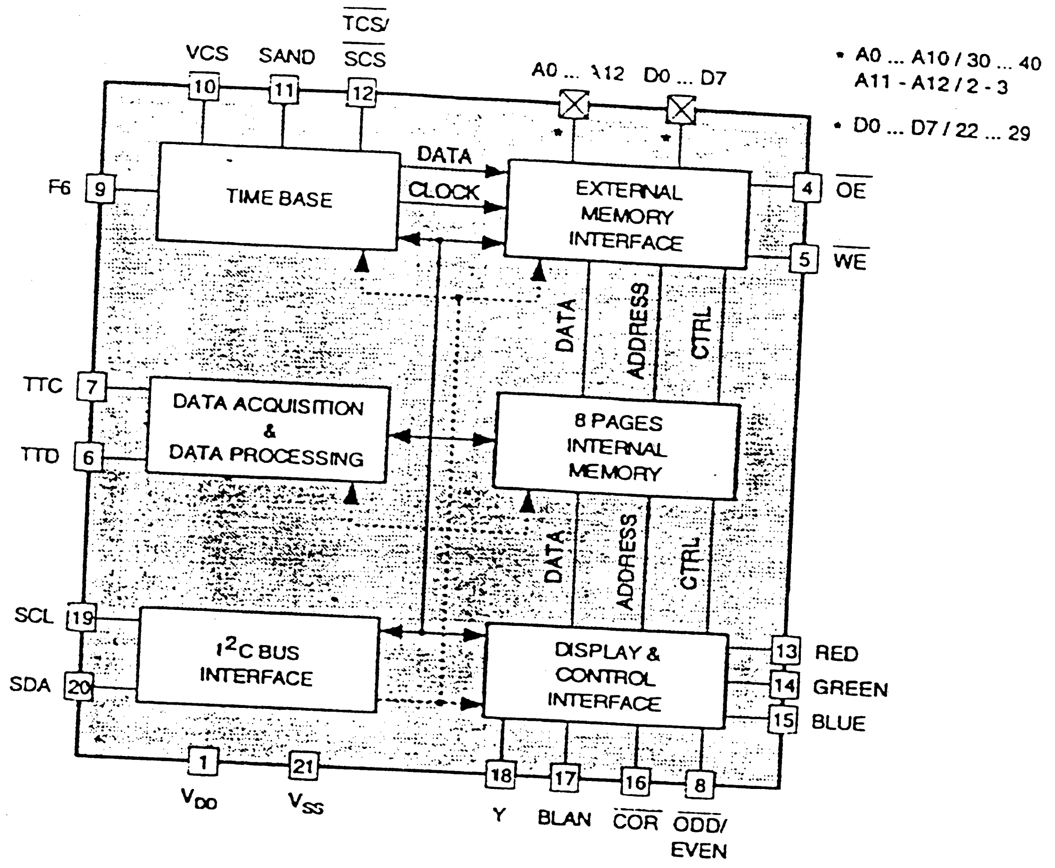
DESCRIPTION

The STV5345 is a HCMOS integrated circuit which performs all the processing of logical data within a 625 lines system teletext decoder. It is designed to operate in conjunction with one-chip: the SAA5231 integrated chip which extracts Teletext information embedded in a composite video signal. Up to 8 pages of display data can be stored in internal memory. Using 8 Kbytes of external memory leads to a 16 pages application. A complete system also comprises a microprocessor controlling the STV5345 via a 2-wires serial bus. An on-chip ROM memory contains the character sets. The STV5345 performs automatic selection of one of up to six natural languages. Data bytes may be decoded in either 7-Bit plus parity or in full 8-Bit formats. The chip set also supports facilities for reception and display of higher-level protocol data.

PIN CONNECTIONS



BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{DD}	Power Supply Range	-0.3, +6.0	V

INPUT VOLTAGE RANGE:

V_I	VCS, SDA, SCL, DO-D7	-0.3, V_{DD} + 0.5	V
V_I	TTD, F6, $\overline{\text{TCS}}$/SCS, TTC	-0.3, +10	V

OUTPUT VOLTAGE RANGE:

V_O	SAND, A0-A12,$\overline{\text{OE}}$,$\overline{\text{WE}}$, DO-D7, SDA, $\overline{\text{ODD}}$/EVEN, R,G,B	-0.3, V_{DD}	V
V_O	BLAN, $\overline{\text{COR}}$, Y, $\overline{\text{TCS}}$/$\overline{\text{SCS}}$	-0,3, V_{DD}	V
T_{stg}	Storage Temperature Range	-20, +125	°C
T_A	Operating Ambient Temperature Range	-20, +70	°C

ELECTRICAL CHARACTERISTICS

V_{DD} = 5V, V_{SS} = 0V, T_A = -20 to +70°C

Symbol	Parameter	Min	Typ	Max	Unit
V_{DD}	Supply Voltage (Pin 1)	4.5	5	5.5	V
I_{DD}	Supply Current (operating mode)		TBD		mA

PIN DESCRIPTION

Pin	Symbol	Function	Descripton
1	V_{DD}	+5V	Positive supply voltage
2,3,40*	A11, A12, A10	Chapter address	Address selection outputs for 1 of 8 external static RAM chapters each of 1 Kbytes.
4*	$\overline{\text{OE}}$	Output enable	Active-low external static RAM output enable control signal.
5*	$\overline{\text{WE}}$	Write enable	Active-low external static RAM write enable control signal. It supports write-cycles interleaved with read-cycles.
6	TTD	Teletext data input	An A.C. coupled teletext data input supplied by the SAA5231 chip is latched to V_{SS} between 4 and 8μs after each TV line.
7	TTC	Teletext clock input	A 6.9375MHz clock signal, supplied by the SAA5231 chip, is internally A.C. coupled, clamped and buffered.
8	$\overline{\text{ODD}}$/EVEN	Interlaced mode state output	High for even numbered and low for odd-numbered frames. The value is valid 2μs before the end of lines 311 and 624.
9	F6	Character display clock signal	The 6MHz clock signal, supplied by the SAA5231 chip is internally A.C. coupled, clamped and buffered.
10	VCS	Video composite synchronization input signal	Active high VCS input.
11	SAND	Sandcastle	Three level output pulse to the SAA5231 device. Phase lock, blanking signal, and color burst components are contained in this signal.
12	$\overline{\text{TCS}}$/$\overline{\text{SCS}}$	Input / output composite synchronization signal	Scan composite input signal ($\overline{\text{SCS}}$) for the display - synchronization or Text composite sync. ($\overline{\text{TCS}}$) output signal to the SAA5231. Both signals are active low.
13,14,15	R G B	Red, green, blue	Character and background colors active- high open-drain outputs.
16	$\overline{\text{COR}}$	Contrast reduction	Open-drain active-low output supporting optimal display of characters in "mixed mode" operation.
17	BLAN	Blanking signal output	Open-drain active high output for TV-image blanking in normal and mixed-mode operation.
18	Y	Foreground output	Open-drain active-high output with fore ground information. Can be used for printer command.
19	SCL	Serial clock	Microprocessor clock input via serial bus.
20	SDA	Serial data input / output	Open-drain microprocessor serial data input/output via serial bus.
21	V_{SS}	0 Volt	Ground.
22-29*	D0-D7	Parallel data input / output	Eight tri-state input/output for data read/write from/to an external static RAM.
30-39*	A0-A9	Address signals	Ten addresses output pins for accessing to individual Bytes of a 1 Kbyte chapter stored in an external Static RAM.

Pins only activated when 8KBytes of external memory are addressed, otherwise pins $\overline{\text{OE}}$ and $\overline{\text{WE}}$ remain high, and others remain low.

PFC84C81/C (IC727)

SINGLE-CHIP 8-BIT MICROCONTROLLERS WITH I^2C-BUS INTERFACE

DESCRIPTION

An advanced CMOS process is used to manufacture the PCF84C00, PCF84C21/C, PCF84C41/C and PCF84C81 /C microcontrollers. The PCF84C21C, PCF84C41C and PCF84C81C operate at a higher clock frequency. Each device has 20 quasi-bidirectional I/0 port lines, a serial I/0 interface, a single, level vectored interrupt structure, an 8-bit timer/event counter and on-chip clock oscillator and clock circuits. On-chip RAM and ROM content is as follows:

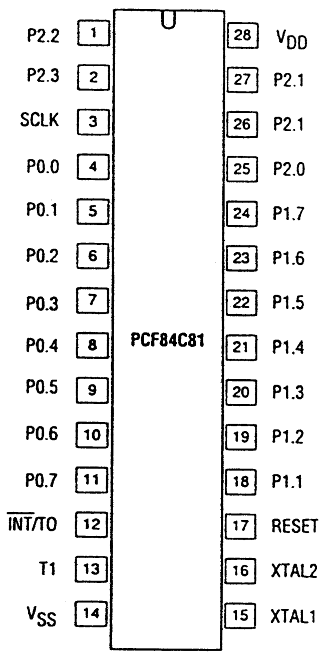
- **PCF84C00 - 256 x 8 RAM, external program memory**
- **PCF84C21 - 64 x 8 RAM, 2 K x 8 ROM**
- **PCF84C41 - 128 x 8 RAM, 4 K x 8 ROM**
- **PCF84C81 - 256 x 8 RAM, 8 K x 8 ROM**

These efficient controllers also perform well as arithmetic processors. They have facilities for both binary and 8CD arithmetic plus bit-handling capabilities. The instruction set is similar to that of the MAB8048.

These microcontrollers are members of the PCF84CXXX family.

For detailed information, consult the PCF84CXXX data sheet.

PINNING


P2.2 1
P2.3 2
SCLK 3
P0.0 4
P0.1 5
P0.2 6
P0.3 7
P0.4 8
P0.5 9
P0.6 10
P0.7 11
INT/T0 12
T1 13
VSS 14
PCF84C81
28 VDD
27 P2.1
26 P2.1
25 P2.0
24 P1.7
23 P1.6
22 P1.5
21 P1.4
20 P1.3
19 P1.2
18 P1.1
17 RESET
16 XTAL2
15 XTAL1

Pinning diagram

FEATURES

- 8-bit CPU, ROM, RAM, I/0 in a single 28-lead DIL or SO package
- 2 K, 4 K or 8 K x ROM; also a ROM-less version
- 64, 128 or 256 x 8 RAM
- 20 quasi-bidirectional I/0 port lines
- Two test inputs, one of which is also the external interrupt input
- Single-level vectored interrupts: external, timer/event counter and serial I/0
- I^2C hardware interface for serial data transfer on two lines (serial I/0 data via an existing port line and clock via a dedicated line)
- 8-bit programmable timer/event counter
- Clock frequency range: 100 kHz to 10 MHz; C versions: 1 MHz to 12 MHz
- Over 80 instructions (similar to those of the MAB8048) all of 1 or 2 cycles
- Single supply voitage (2,5 to 5,5 V)
- STOP and IDLE modes
- Power-on reset circuit
- Operating temperature range: -40 to +85°C
- High current on Port 1: I_{OL} = 10 mA at V_{OL} = 1,2 V (all versions except the PCF84C00).

For following sections see PCF84XXX family data sheet

Program memory
Data memory
Program counter stack
IDLE and STOP modes
I/0 facilities
Serial I/0
Interrupts
Oscillator
Timer/event counter
Program status word
Program counter
Central processing unit
Conditional branch logic
Test input T1

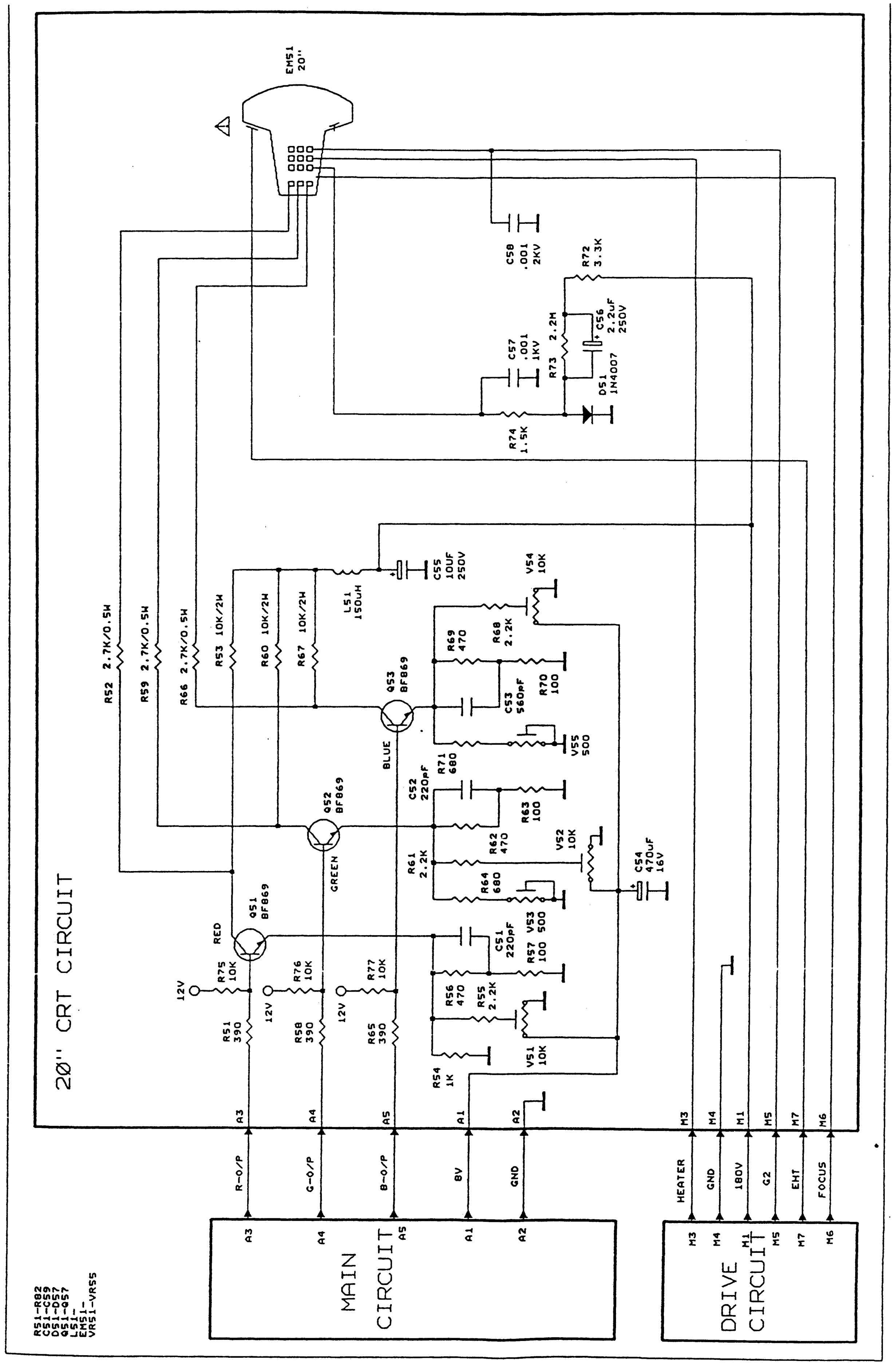
Power-on reset
Instruction set

PACKAGE OUTLINES

PCF84C21/41/81P	:28-lead DIL; plastic (SOT117).
PCF84C21/41/81T	:28-lead mini-pack; plastic (SO28; SOT 136A).
PCF84C00B	:28-lead 'piggy back' package (supports up to 28-pin EPROM).
PCF84C00T	:56-lead mini-pack; plastic (VSO56; SOT 190).

PIN DESIGNATION

Pin	Symbol	Type	Function
3	SCLK	I/O	Clock: bidirectional clock for serial I/O.
4-11	P0.0-P0.7	I/0	Port 0: 8-bit quasi-bidirectional I/0 port.
12	INT/T0	I	Interrupt/Test 0: external interrupt input (negative edge triggered) / test input pin; when used as a test input, this pin is directly tested by conditional branch instructions JT0 and JNT0.
13	T1	I	Test 1: test input pin, directly tested by conditional branch instructions JT1 and JNT1. T1 may also be selected as an input to the 8-bit timer/event counter via the STRT CNT instruction.
14	V_{SS}	I	Ground: circuit earth potential.
15	XTAL 1	I	Oscillator input: input from a crystal which determines the internal oscilator frequency or an external clock generator.
16	XTAL 2	I/0	Oscillator output: output of the inverting amplifier.
17	RESET	I/0	Reset input: used to initialize the microcontroller (active HIGH): also output of power-on-reset circuit.
18-25	P1.0-P1.7	I/0	Port 1: 8-bit quasi-bidirectional I/0 port.
26, 27, 1, 2	P2.0-P2.3	I/0	Port 2: 4 bit quasi-bidirectional I/0 port. P2.3 is the serial data input/ output in serial I/0 mode.
28	V_{DD}	I	Power supply: 2,5 V to 5,5 V.


20" CRT CIRCUIT
EMS1 20"
C58 .001 2KV
R72 3.3K
C57 .001 1KV
R73 2.2M
C56 2.2uF 250V
DS1 1N4007
R74 1.5K
C55 10uF 250V
L51 150uH
V54 10K
R52 2.7K/0.5W
R59 2.7K/0.5W
R66 2.7K/0.5W
R53 10K/2W
R60 10K/2W
R67 10K/2W
R69 470
R68 2.2K
Q53 BF869
C53 560pF
R70 100
V55 500
BLUE
R71 680
C52 220pF
Q52 BF869
R63 100
R62 470
V52 10K
R61 2.2K
R64 680
C54 470uF 16V
GREEN
Q51 BF869
RED
C51 220pF
R57 100
V53 500
R75 10K
R76 10K
R77 10K
R56 470
R55 2.2K
12V
R51 390
R58 390
R65 390
V51 10K
R54 1K
A3 A4 A5 A1 A2
M3 M4 M1 M5 M7 M6
R-O/P
G-O/P
B-O/P
8V
GND
HEATER
GND
180V
G2
EHT
FOCUS
MAIN CIRCUIT
DRIVE CIRCUIT
R51-R82
C51-C57
DS1-DS7
Q51-Q57
L51-
EMS1-
VR51-VR55

BF 869 . BF 871
(Q51, Q52, Q53)

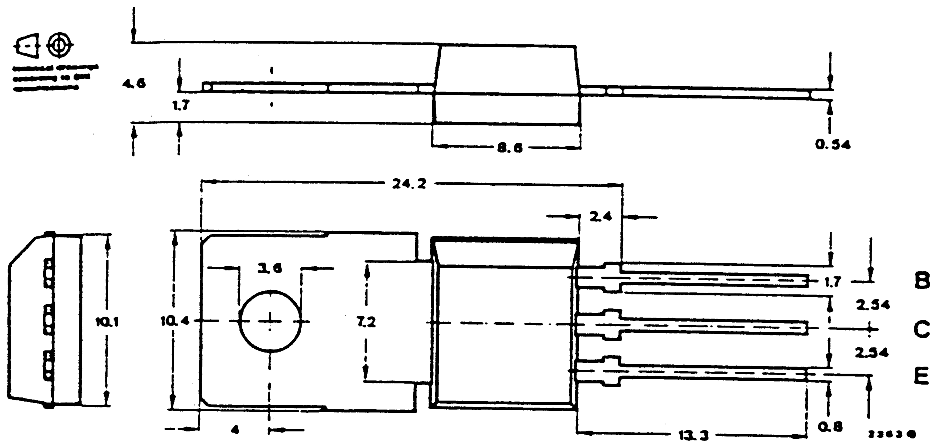
Silicon NPN Epitaxial Planar RF Transistors

Applications: Video-B-class power stages in TV-receivers

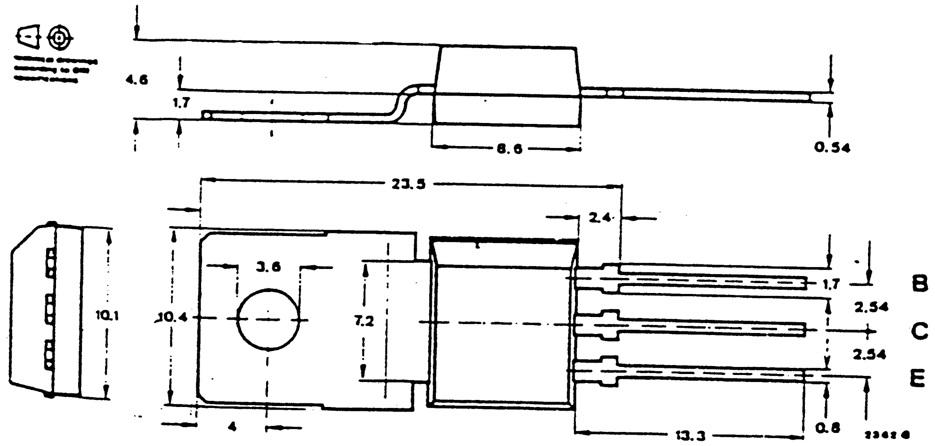
FEATURES:

- High reverse voltage
- BF 869 complementary to BF 870
- BF 871 complementary to BF 872

Dimensions in mm



BF 869 . BF 871



Collector connected
with metallic surface

Case
34 A 3 DIN 41 869
JEDEC TO 202
Weight max. 1.8 g

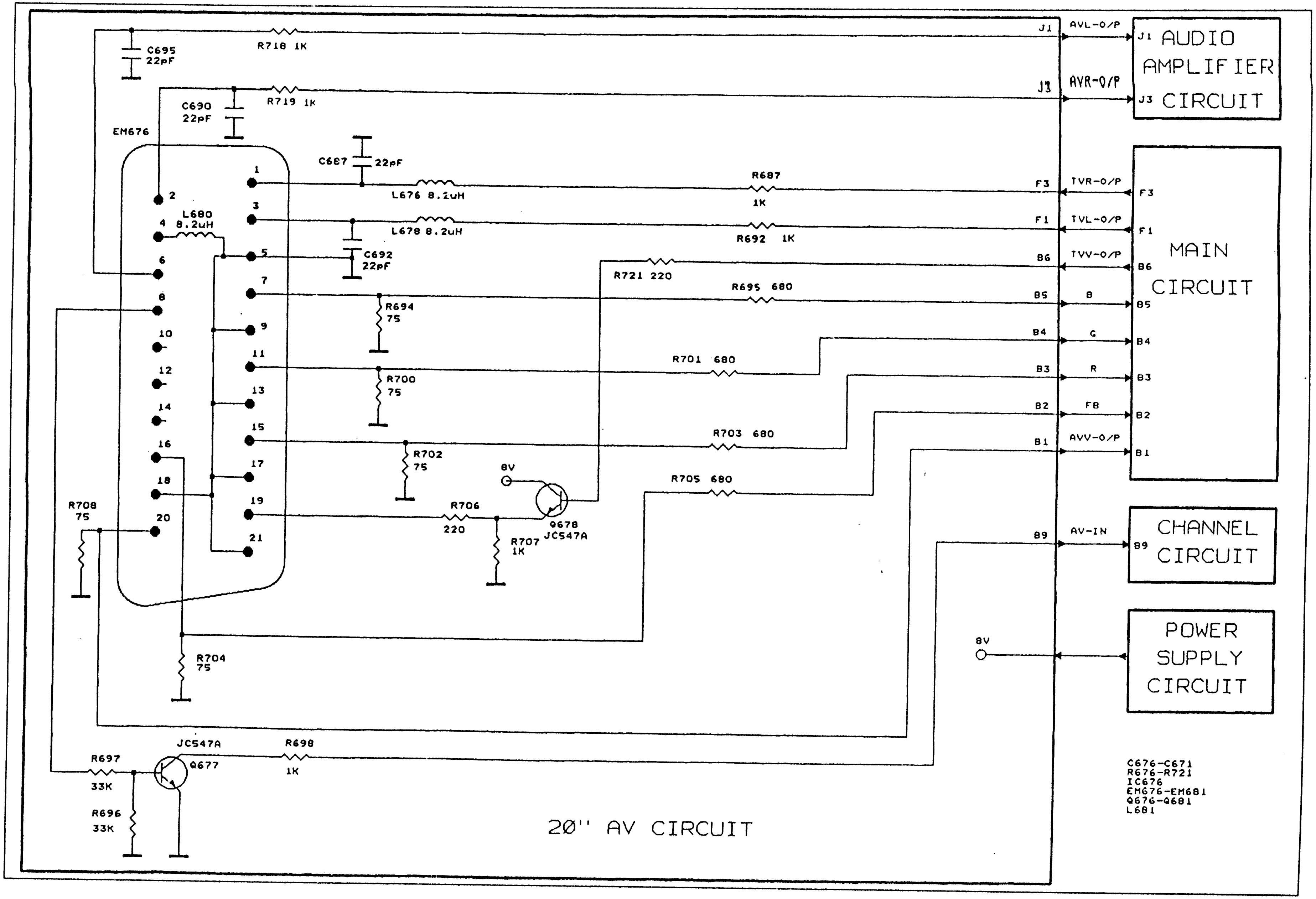
Absolute maximum ratings		**BF 869**	**BF 871**	
Collector-base voltage	V_{CBO}	250	300	V
Collector-emitter voltage	V_{CEO}	250		V
$R_{BE} \leqq 2.7$ kΩ	V_{CER}		300	V
Emitter-base voltage	V_{EBO}	5		V
Collector current	I_C	50		mA
Collector peak current	I_{CM}	100		mA
Total power dissipation $T_{case} \le 25$ °C	P_{tot}	5		W
Junction temperature	T_j	150		°C
Storage temperature range	T_{stg}	-65...+150		°C

Thermal resistances		**Min.**	**Typ.**	**Max.**	
Junction ambient	R_{thJA}			85	K/W
Junction case	R_{thJC}			25	K/W

Characteristics

T_{amb} = 25°C, unless otherwise specified

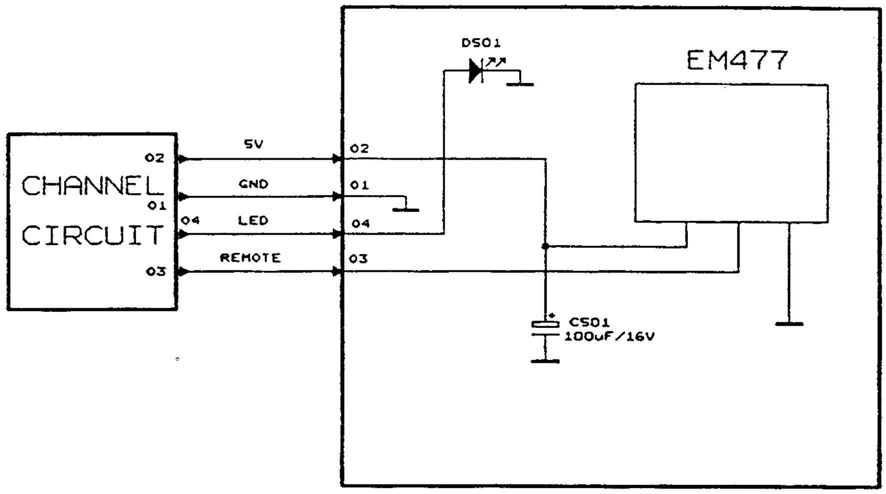
			Min.	Typ.	Max.	
Collector cut-off current						
V_{CB}=200V	**BF 869**	I_{CBO}			100	nA
V_{CB}=250V, R_{BE}=2.7 kΩ	**BF 871**	I_{CER}			50	nA
V_{CE}=200V, R_{BE}=2.7 kΩ, T_j= 150°C		I_{CER}			10	μA
Emitter cut-off current						
V_{EB} = 5V		I_{EBO}			10	μA
Collector-emitter breakdown voltage						
I_C= 1 mA	**BF 869**	$V_{(BR)CEO}$	250			V
I_C = 1 μA, R_{BE} = 2.7 kΩ	**BF 871**	$V_{(BR)CER}$	300			V
DC forward current transfer ratio						
V_{CE} = 20 V, I_C = 25 mA		h_{FE}	50			
Gain bandwidth product						
V_{CB} = 10 V, I_C = 10 mA		f_T	60			MHz
Feedback capacitance						
V_{CB} = 30 V, I_C = 0, f =1 MHz		$C_{üre}$			1.8	pF
Collector saturation RF voltage						
I_C = 25 mA, T_j = 150 °C		$V_{CEsatHF}$		20		V

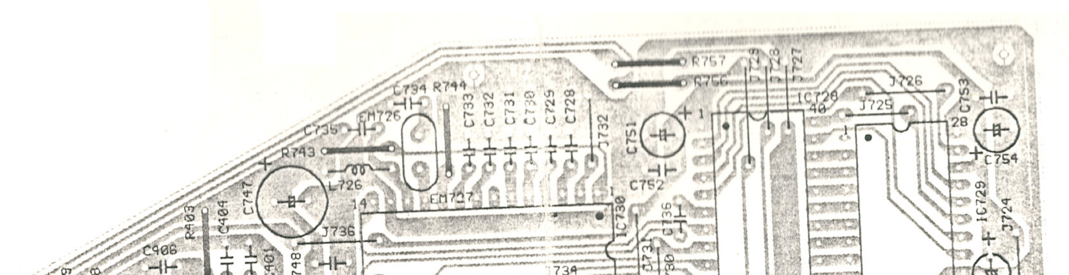

C695
22pF
R718 1K
J1
AVL-O/P
J1
AUDIO
AMPLIFIER
CIRCUIT
C690
22pF
R719 1K
J3
AVR-O/P
J3
EM676
C687
22pF
1
2
3
4
L680
8.2uH
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
L676 8.2uH
R687
1K
F3
TVR-O/P
F3
L678 8.2uH
R692 1K
F1
TVL-O/P
F1
C692
22pF
R721 220
B6
TVV-O/P
B6
MAIN
CIRCUIT
R694
75
R695 680
B5
B
B5
B4
G
B4
R701 680
R700
75
B3
R
B3
B2
FB
B2
R703 680
R702
75
B1
AVV-O/P
B1
8V
R705 680
R706
220
Q678
JC547A
R707
1K
R708
75
B9
AV-IN
B9
CHANNEL
CIRCUIT
R704
75
8V
POWER
SUPPLY
CIRCUIT
JC547A
R698
1K
R697
33K
Q677
R696
33K
20'' AV CIRCUIT
C676-C671
R676-R721
IC676
EM676-EM681
Q676-Q681
L681

A/V SCART

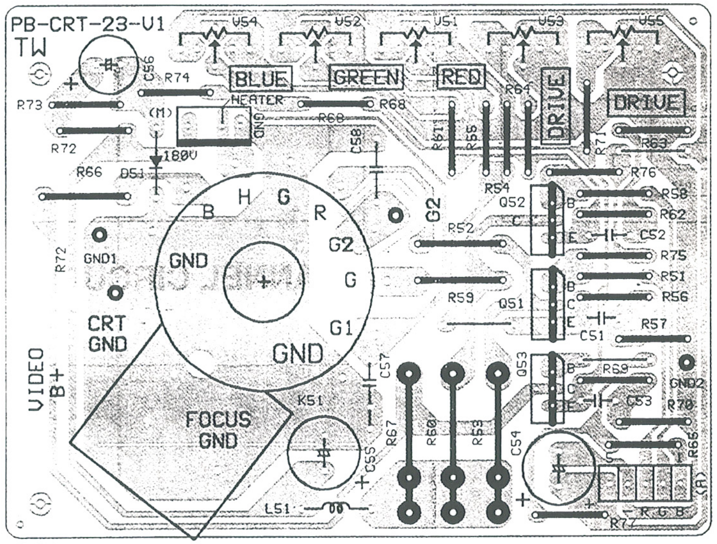
1- Audio output 1. right channel 0.5 VRMS / < 1kohm
2- Audio input 1. right channel 0.5 VRMS (connected to no. 6)
3. Audio output 2. left channel 0.5 VRMS (connected to no.1)
4- GND (audio)
5- GND
6- Audio input 2. left channel 0.5 VRMS / >10kohm
7- RGB input, blue (B)
8- Switch signal video (status)
9- GND
10- Reserved for clock signal (not connected)
11- RGM input, green (G)
12- Reserved for remote control (not connected)
13- GND
14- GND switch signal RGB
15- RGB input, red (R)
16- Switch signal RGB
17- GND (video)
18- GND
19- Video output 1 Vpp/75ohm
20- Video input 1 Vpp/75ohm
21- Shield

REMOTE SENSOR CIRCUIT

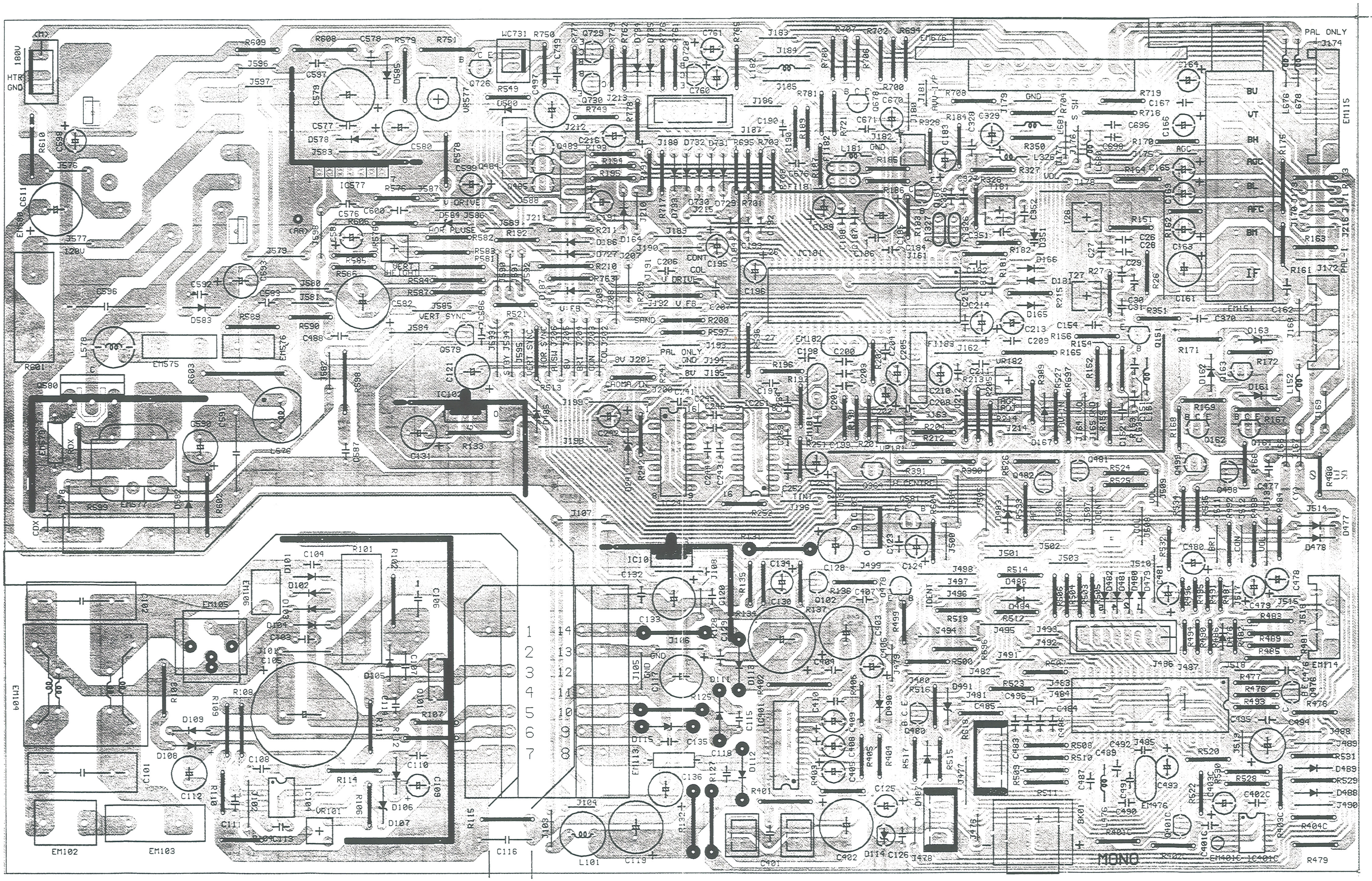

DS01
EM477
CHANNEL
CIRCUIT
02
01
04
03
5V
GND
LED
REMOTE
02
01
04
03
CS01
100uF/16V


R757
R756
J729
J728
J727
J726
J725
IC728
C753
C754
C794
R744
EM726
C735
C733
C732
C731
C730
C729
C728
J732
C751
C752
R743
L726
EM727
C747
IC730
C736
J736
C748
J734
J735
J731
J730
IC729
J724
C755
R403
C404
C406
C401
C409
C408
C407
C402
C410
C405
R-O/P
IC401
J903
J904
VC726
R748
C742
C743
R741
R739
R737
J722
J723
IC731
L-O/P
C411
C903
R746
R745
C737
C740
C744
R735
R743
J715
D728
C738
C739
C741
R747
R753
C759
J721
J720
J719
J718
J717
J716
C758
R406
C412
C413
C414
C417
J907
J906
R101
R402
R752
V.PLUSE
CONT
BRI
R754
Q727
R736
R738
C757
J711
J714
J713
J712
EM729
R407
EM901
C914
C913
IC901
C916
R755
R732
C750
R730
B C E
R740
J710
IC727
R332
FI330
FI329
C340
C911
Q726
R906
C915
R901
C912
FI335
FI332
J709
J708
R750
R758
C756
R775
C906
C901
L901
C904
C905
C907
C908
J905
R335
R331
STEREO SCPERATE
FI334
R341
R339
R340
J705
J704
J702
J701
C302
C303
J902
R687
R692
VR326
R337
C338
J703
J33
J32
F3
F2
R719
R718
H7
H6
H5
H4
H3
H2
H1
R902
R336
J901
R339
IC327
C337
C336
EM114
EM115

GS/TXT PCB.


PB-CRT-23-V1
TW
VS4
VS2
VS1
VS3
VS5
BLUE
GREEN
RED
DRIVE
DRIVE
HEATER
C56
R74
R73
R72
R68
R61
R55
R64
R71
R63
C58
180V
R66
D51
R76
R54
Q52
R58
R62
C52
G2
R52
B
H
G
R
G2
G
G1
GND
GND
GND1
R75
R51
R56
R59
Q51
C51
R57
CRT
GND
VIDEO
B+
Q53
R53
C53
GND2
R70
C57
K51
FOCUS
GND
C55
R67
R60
R63
C54
R65
L51
R77
R
G
B

CRT PCB



180V
HTR
GND
120V
PAL ONLY
BU
VT
BH
AGC
BL
AFC
BM
IF
GND
V DRIVE
HOR PLUSE
VERT HEIGHT
VERT SYNC
CONT
COL
V DRIVE
V FB
SAND
PAL ONLY
CHROMA IN
8V
AGC ADJ
H CENTRE
TINT
IDENT
BRI
CON
VOL
MONO
CDX
ROX
STBY
HOR SYNC
VERT SYNC
AGC
PAL-I
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IC577
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IC101
IC181
IC251
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IC401C
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EM106
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C101
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D732
D799
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T28
UR181
UR182
UR577
UR101
WC731
BK01
J101
J103
J104
J105
J106
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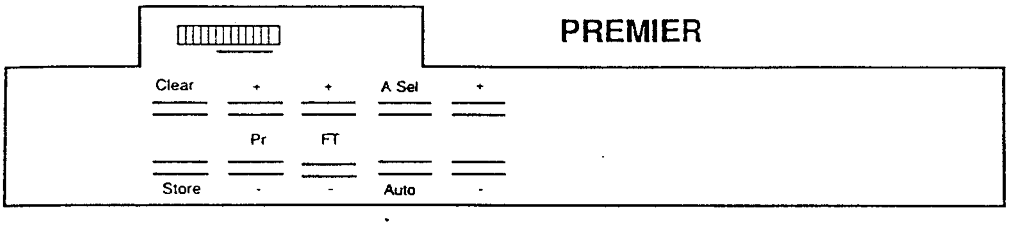
J596
J597

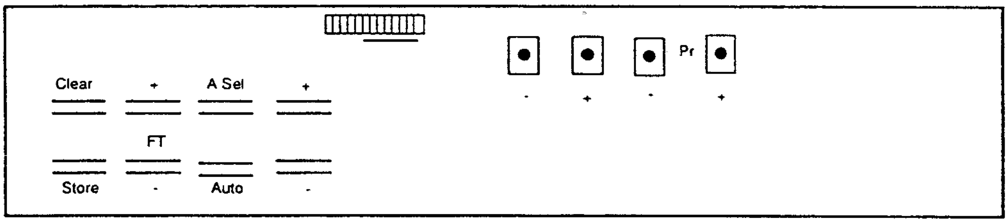
MAIN PCB

KEYBOARDS

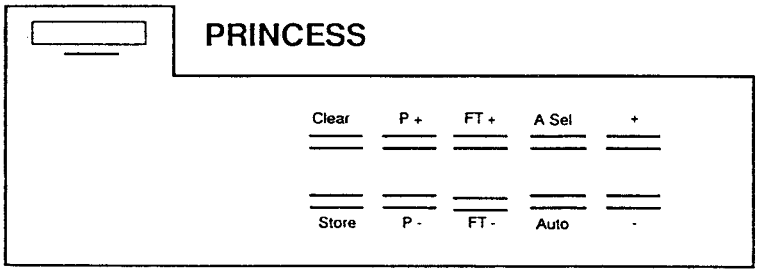
PREMIER


Clear
+
+
A Sel
+
Pr
FT
Store
-
-
Auto
-

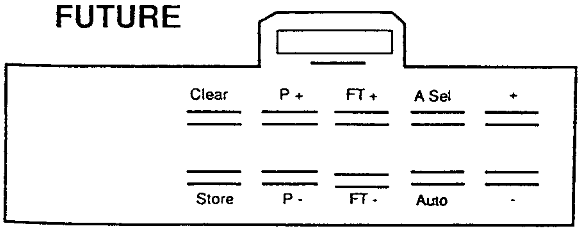
QUADRO


Pr
-
+
-
+
Clear
+
A Sel
+
FT
Store
-
Auto
-

PRINCESS


Clear
P +
FT +
A Sel
+
Store
P -
FT -
Auto
-

FUTURE


Clear
P +
FT +
A Sel
+
Store
P -
FT -
Auto
-

GENERAL CHARACTERISTIC

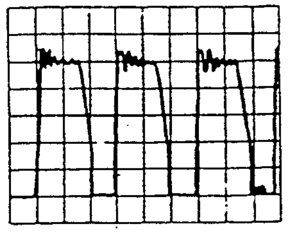
TELEVISION

Picture tube	20" and 21"
Colour system	PAL and PAL SECAM
Channel coverage	VHF 1 channel 2-4 VHF 3 channel 5-12 UHF channel 21-69 S channel (S1-S40) CTV cable TV
Tuning system	70 channel
External antenna	75 Ohm DIN type
Speaker	8 Ohm x 2 8 Ohm tweteer x 2
Audio output (RMS)	5 W maximum
AV connection	21 PIN scart

GENERAL

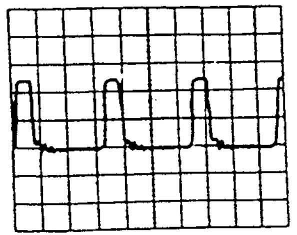
Dimension	556 (D), 594 (L), 541 (H) mm
Weight	19.5 Kg
Mains supply	AC 170-250V 50Hz
Power consumption	77W
Accessories	Remote control Remote control batteries

1) 5 usn/div 100 volt/div



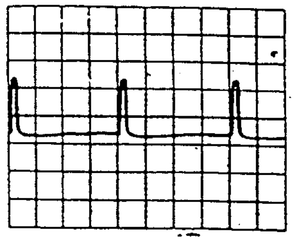
Collector of Q101

2) 20 usn/div 2volt/div



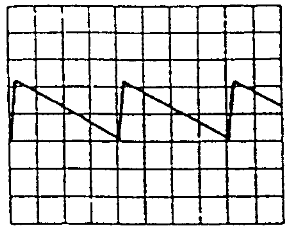
IC-476 pin 26

3) 5m sn/div 2volt/div



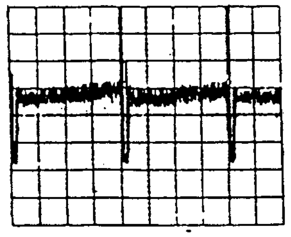
IC-476 pin 27

4) 5 msn/div 0,5 volt/div



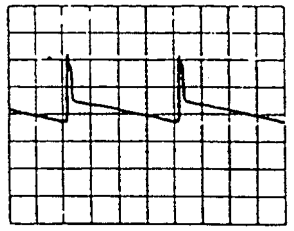
IC-181 pin 41

5) 5 msn/div 1 volt/div



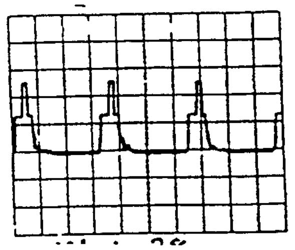
IC-577 pin 4

6) 5 msn/div 20 volt/div



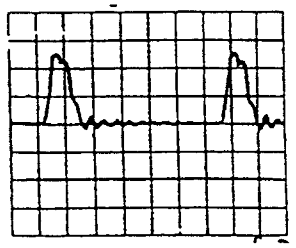
IC-577 pin 2

7) 20 usn/div 2 volt/div



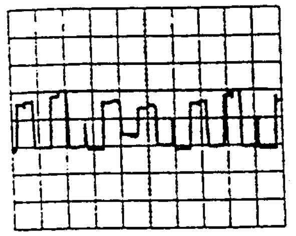
IC-181 pin 38

8) 10 usn/div 50 volt/div



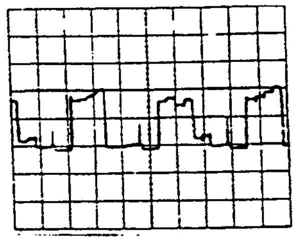
Cathode of D 584

9) 20 usn/div 2 volt/div



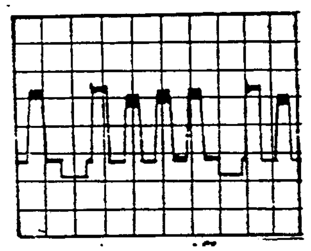
IC-181 pin 20

10) 20 usn/div 2 volt/div



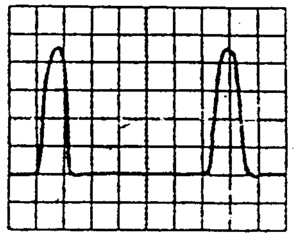
IC-181 pin 19

11) 10 usn/div 2 volt/div



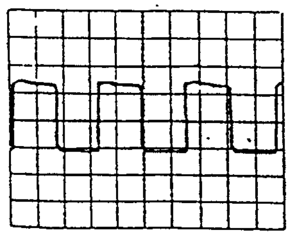
IC-181 pin 18

12) 10 usn/div 200 volt/div



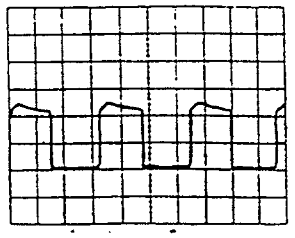
Collector of Q 580

13) 20 usn/div 0.5 volt/div



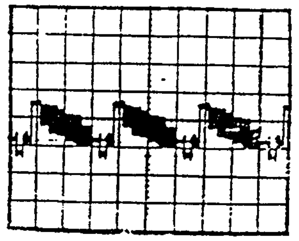
IC-181 pin 37

14) 20 usn/div 50 volt/div



Collector of Q 581

15) 20 usn/div 1 volt/div



IC-181 pin 13

FUNCTION: MAIN

CAPACITORS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: MAIN CHASSIS				
040932086801		CAP. CERAMIC MULTI.	68 PF 5% 100 V	C1	
040070041021	C151	CAP.CERAMIC	1 NF +80-20% 50 V F	C1	
040070041021	C152	CAP.CERAMIC	1 NF +80-20% 50 V F	C1	
040070041021	C153	CAP.CERAMIC	1 NF +80-20% 50 V F	C1	
040070041021	C154	CAP.CERAMIC	1 NF +80-20% 50 V F	C1	
042140164771	C161	CAP.ELECT.	470 UF 20% 16 V	C5	
040070021031	C162	CAP.CERAMIC	100 NF +80-20% 25 V F	C2	
042417163361	C165	CAP.ELECT.	33 UF 20% 16 V	C2	
621003003341	C167	CAP.M.POLYESTER	0.33 UF 5% 50 V	C1	
040040044721	C181	CAP.CERAMIC	4700 PF 10% 50 V B	C1	
040042041001	C182	CAP.CERAMIC	10 PF 10% 50 V CH	C1	
042446161061	C183	CAP.ELECT.	10 UF 20% 16 V	C2	
040070021031	C184	CAP.CERAMIC	100 NF +80-20% 25 V F	C2	
042417162271	C185	CAP.ELECT.	220 UF 20% 16 V	C2	
040070021031	C186	CAP.CERAMIC	100 NF +80-20% 25 V F	C2	
040070021031	C187	CAP.CERAMIC	100 NF +80-20% 25 V F	C2	
621004004731	C188	CAP.M.POLYESTER	0.047 UF 10% 50 V	C2	
042446161061	C189	CAP.ELECT.	10 UF 20% 16 V	C2	
040070021031	C190	CAP.CERAMIC	100 NF +80-20% 25 V F	C2	
042446161061	C191	CAP.ELECT.	10 UF 20% 16 V	C2	
040070021031	C192	CAP.CERAMIC	100 NF +80-20% 25 V F	C2	
040070021031	C193	CAP.CERAMIC	100 NF +80-20% 25 V F	C2	
040070021031	C194	CAP.CERAMIC	100 NF +80-20% 25 V F	C2	
042446161061	C195	CAP.ELECT.	10 UF 20% 16 V	C2	
042446161061	C196	CAP.ELECT.	10 UF 20% 16 V	C2	
040070021031	C197	CAP.CERAMIC	100 NF +80-20% 25 V F	C2	
621004004721	C198	CAP.M.POLYESTER	0.0047UF 10% 50 V	C1	
040032041801	C200	CAP.CERAMIC	18 PF 5% 50 V CH	C1	
040070021031	C201	CAP.CERAMIC	100 NF +80-20% 25 V F	C2	
042446161061	C202	CAP.ELECT.	10 UF 20% 16 V	C2	
621004002221	C203	CAP.M.POLYESTER	0.0022UF 10% 50 V	C1	
618024004721	C204	CAP.M.POLYESTER	0.0047UF 10% 50 V	C1	
042416501051	C205	CAP.ELECT.	1 UF 20% 50 V	C2	
040070042021	C206	CAP.CERAMIC	2 NF +80-20% 50 V F	C1	
621004001041	C207	CAP.M.POLYESTER	0.1 UF 10% 50 V	C2	
040070042231	C208	CAP.CERAMIC	22 NF +80-20% 50 V F	C1	
040070042231	C209	CAP.CERAMIC	22 NF +80-20% 50 V F	C1	
042184502251	C210	CAP.ELECT.	2.2 UF 20% 50 V	C1	
040070021031	C211	CAP.CERAMIC	100 NF +80-20% 25 V F	C2	
042446161061	C213	CAP.ELECT.	10 UF 20% 16 V	C2	
042184502251	C214	CAP.ELECT.	2.2 UF 20% 50 V	C1	
040070021031	C241	CAP.CERAMIC	100 NF +80-20% 25 V F	C2	
042140161071	C242	CAP.ELECT.	100 UF 20% 16 V	C2	
040070021031	C243	CAP.CERAMIC	100 NF +80-20% 25 V F	C2	
040070021031	C244	CAP.CERAMIC	100 NF +80-20% 25 V F	C2	
040070041021	C245	CAP.CERAMIC	1 NF +80-20% 50 V F	C1	
040070041021	C246	CAP.CERAMIC	1 NF +80-20% 50 V F	C1	
040041044701	C326	CAP.CERAMIC	47 PF 10% 50 V SL	C1	
040041044701	C328	CAP.CERAMIC	47 PF 10% 50 V SL	C1	
621003003341	C476	CAP.M.POLYESTER	0.33 UF 5% 50 V	C1	
040070041021	C671	CAP.CERAMIC	1 NF +80-20% 50 V F	C1	

FUNCTION: MAIN

POSITION: MAIN CHASSIS

042416501051	C163	CAP.ELECT. **	1 UF 20% 50 V	C2
042446161061	C164	CAP.ELECT. **	10 UF 20% 16 V	C2
042446161061	C166	CAP.ELECT. **	10 UF 20% 16 V	C2
042446161061	C169	CAP.ELECT. **	10 UF 20% 16 V	C2
042140161071	C251	CAP.ELECT. *	100 UF 20% 16 V	C2
040070021031	C252	CAP.CERAMIC *	100 NF +80-20% 25 V F	C2
621004001041	C253	CAP.M.POLYESTER *	0.1 UF 10% 50 V	C2
621004002241	C254	CAP.M.POLYESTER *	0.22 UF 10% 50 V	C4

NOTE: * WILL BE ADDED FOR SECAM
** IS NOT BE USED FOR PAL I SYSTEM

POSITION: MAIN CHASSIS

040070041021		CAP.CERAMIC *	1 NF +80-20% 50 V F	C1
040040042201		CAP.CERAMIC *	22 PF 10% 50 V SL	C1
040040042201		CAP.CERAMIC *	22 PF 10% 50 V SL	C1
040070041021	C30	CAP.CERAMIC *	1 NF +80-20% 50 V F	C1
040032041501	C26	CAP.CERAMIC *	15 PF 5% 50 V CH	C1
040030045091	C27	CAP.CERAMIC *	5 PF 5% 50 V CH	C1
040030045091	C28	CAP.CERAMIC *	5 PF 5% 50 V CH	C1
040032041001	C29	CAP.CERAMIC *	10 PF 5% 50 V CH	C1

NOTE: * WILL BE USED ONLY FOR FTZ FUNCTION

RESISTORS

POSITION: MAIN CHASSIS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
030020615131	R151	RES.CAR.FILM	150 R 5% 1/4 W	R1	
030020612231	R152	RES.CAR.FILM	1.2 K 5% 1/4 W	R1	
030020612231	R153	RES.CAR.FILM	1.2 K 5% 1/4 W	R1	
030020656231	R154	RES.CAR.FILM	5.6 K 5% 1/4 W	R1	
030020610031	R155	RES.CAR.FILM	10 R 5% 1/4 W	R1	
030020668031	R156	RES.CAR.FILM	68 R 5% 1/4 W	R1	
030020610331	R163	RES.CAR.FILM	10 K 5% 1/4 W	R1	
030020622331	R164	RES.CAR.FILM	22 K 5% 1/4 W	R1	
030020612331	R171	RES.CAR.FILM	12 K 5% 1/4 W	R1	
030020647231	R172	RES.CAR.FILM	4.7 K 5% 1/4 W	R1	
030020615331	R173	RES.CAR.FILM	15 K 5% 1/4 W	R1	
030020627131	R181	RES.CAR.FILM	270 R 5% 1/4 W	R1	
030020656231	R182	RES.CAR.FILM	5.6 K 5% 1/4 W	R1	
030020612121	R183	RES.CAR.FILM	120 R 5% 1/4 W	R1	
030020610131	R184	RES.CAR.FILM	100 R 5% 1/4 W	R1	
030020618111	R185	RES.CAR.FILM	180 R 5% 1/4 W	R1	
030020610231	R186	RES.CAR.FILM	1 K 5% 1/4 W	R1	
030020615231	R187	RES.CAR.FILM	1.5 K 5% 1/4 W	R1	
030020647231	R189	RES.CAR.FILM	4.7 K 5% 1/4 W	R1	
030020668211	R190	RES.CAR.FILM	6.8 K 5% 1/4 W	R1	
030020668111	R191	RES.CAR.FILM	680 R 5% 1/4 W	R1	
030020610331	R192	RES.CAR.FILM	10 K 5% 1/4 W	R1	
030020610131	R193	RES.CAR.FILM	100 R 5% 1/4 W	R1	

FUNCTION: MAIN

030020610131	R194	RES.CAR.FILM	100	R	5%	1/4 W	R1
030020610131	R195	RES.CAR.FILM	100	R	5%	1/4 W	R1
030020610411	R196	RES.CAR.FILM	100	K	5%	1/4 W	R1
030020647331	R197	RES.CAR.FILM	47	K	5%	1/4 W	R1
030020610031	R199	RES.CAR.FILM	10	R	5%	1/4 W	R1
030020627331	R200	RES.CAR.FILM	27	K	5%	1/4 W	R1
030020682411	R201	RES.CAR.FILM	820	K	5%	1/4 W	R1
030020612331	R202	RES.CAR.FILM	12	K	5%	1/4 W	R1
030020682411	R203	RES.CAR.FILM	820	K	5%	1/4 W	R1
030020633411	R204	RES.CAR.FILM	330	K	5%	1/4 W	R1
030020656231	R205	RES.CAR.FILM	5.6	K	5%	1/4 W	R1
030020622131	R241	RES.CAR.FILM	220	R	5%	1/4 W	R1
030020610231	R242	RES.CAR.FILM	1	K	5%	1/4 W	R1
030020612121	R328	RES.CAR.FILM	120	R	5%	1/4 W	R1
030055722811	R608	RES.M.FILM FUSING	0.22	R	5%	0.5 W	R3
030020612121	J201	RES.CAR.FILM	120	R	5%	1/4 W	R1

POSITION: MAIN CHASSIS

030020610031	R251	RES.CAR.FILM *	10	R	5%	1/4 W	R1
030020622331	R252	RES.CAR.FILM *	22	K	5%	1/4 W	R1
030020610331	R161	RES.CAR.FILM **	10	K	5%	1/4 W	R1
030020610331	R162	RES.CAR.FILM **	10	K	5%	1/4 W	R1
030020610231	R165	RES.CAR.FILM **	1	K	5%	1/4 W	R1
030020622331	R166	RES.CAR.FILM **	22	K	5%	1/4 W	R1
030020647231	R167	RES.CAR.FILM **	4.7	K	5%	1/4 W	R1
030020622331	R168	RES.CAR.FILM **	22	K	5%	1/4 W	R1
030020647231	R169	RES.CAR.FILM **	4.7	K	5%	1/4 W	R1
030020610331	R170	RES.CAR.FILM **	10	K	5%	1/4 W	R1
030020622131	R332	RES.CAR.FILM ***	220	R	5%	1/4 W	R1
030020622131	R341	RES.CAR.FILM ***	220	R	5%	1/4 W	R1

NOTE: * WILL BE ADDED FOR SECAM SYSTEM
** WILL BE NOT USED FOR PAL I SYSTEM
*** WILL BE USED D/K SYSTEM

POSITION: MAIN CHASSIS

030020615011	R26	RES.CAR.FILM *	15	R	5%	1/4 W	R1
030020615131	R27	RES.CAR.FILM *	150	R	5%	1/4 W	R1

NOTE: * WILL BE USED ONLY FOR FTZ FUNCTION

TRANSISTORS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: MAIN CHASSIS				
046001259011	Q151	TRANSISTOR	BF 370	Q3	*
046014055311	Q181	TRANSISTOR	JC 547 A	Q1	*

POSITION: MAIN CHASSIS

FUNCTION: MAIN

046926168331	Q161	TRANSISTOR *	JC 558 B	Q1	*
046926168331	Q162	TRANSISTOR *	JC 558 B	Q1	
046926168331	Q163	TRANSISTOR *	JC 558 B	Q1	

NOTE: * WILL NOT BE USED FOR PAL I SYSTEM

DIODE

POSITION: MAIN CHASSIS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
048210411001	D181	DIODE	1N4148	D1	
048210411001	D187	DIODE	1N4148	D1	
048100255101	D241	DIODE,ZENER	5.1 V 0.5 W 5%	D6	*

POSITION: MAIN CHASSIS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
048210411001	D161	DIODE *	1N4148	D1	
048210411001	D162	DIODE *	1N4148	D1	
048210411001	D163	DIODE *	1N4148	D1	

NOTE: * WILL NOT BE USED FOR PAL I SYSTEM

INTEGRATED CIRCUITS

POSITION:MAIN CHASSIS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
045000000721	IC241	IC	TDA 4661	IC5	*

POSITION: MAIN CHASSIS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
045190083671	IC181	IC *	TDA 8361	IC11	*
045000000711	IC181	IC **	TDA 8362	IC11	*
045000000731	IC251	IC **	TDA 8395	IC7	*

NOTE: * WILL BE NOT USED FOR SECAM SYSTEM
** WILL BE USED FOR SECAM SYSTEM

FUNCTION: MAIN

COILS

POSITION: MAIN CHASSIS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
608980000111	L151	COIL,AXIAL FIX.	1 UH J	CO2	
608980000121	L181	COIL,AXIAL FIX.	4.7 UH J	CO2	
608000000011	T152	COIL,AXIAL FIX.	10 UH	CO2	
608000000011	T182	COIL,AXIAL FIX.	10 UH	CO2	
608080003041	T181	COIL,TUNNING CIRCUIT	36,5 MHz-51 MHz	CO4	

POSITION: MAIN CHASSIS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
608280001871	T26	COIL,TOKO *	31.9 MHz	CO4	
608280001881	T27	COIL,TOKO *	40 MHz	CO4	

NOTE: * WILL BE USED ONLY FOR FTZ FUNCTION

TRIMPOTS

POSITION: MAIN CHASSIS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
611280041031	VR181	TRIMPOT,CARBON	10 K 20% 0.5W VERT.PT6V	VR1	
611280041031	VR182	TRIMPOT,CARBON	10 K 20% 0.5W VERT.PT6V	VR1	

FILTERS

POSITION: MAIN CHASSIS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
037790007861	FI183	FILTER,SAW *	J 1951	FL7	
037730007071	FI181	FILTER,CERAMIC **	5.5 MHz TPS 5.5 MB	FL2	
037730008211	FI326	FILTER,CERAMIC **	5.5 MHz SFE 5.5 MB	FL2	
037720007851	FI334	FILTER,CERAMIC ***	6.74 MHz SFE 6.74MB	FL2	
037730007081	FI182	FILTER,CERAMIC ****	6.5 MHz TPS 6.5 MB	FL2	
037730007741	FI183	FILTER,SAW *****	SAF 38.9MS51P	FL6	

NOTE:
* WILL BE USED FOR PAL I SYSTEM
** WILL NOT BE USED FOR PAL I SYSTEM
*** WILL BE USED FOR D/KST SYSTEM
**** WILL BE USED FOR D/K SYSTEM
***** WILL BE USED B/G OR D/K SYSTEM (STEREO)

FUNCTION: MAIN

CRYSTALS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: MAIN CHASSIS				
049030000501	EM182	CRYSTAL,QUARTZ	4.433619 MHz	CR1	*

CONNECTORS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: MAIN CHASSIS				
075030411001	WC479	CONNECTOR 4P	4P	CN2	
075030411001	WC733	CONNECTOR 4P	4P	CN2	
075030511001	WC734	CONNECTOR 5P	5P	CN2	

TUNERS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: MAIN CHASSIS				
616800020051	EM151	TUNER *	SAMSUNG TUNER	TUN1	*
616805700011		TUNER **	SAMSUNG TUNER	TUN1	*

NOTE: * WILL NOT BE USED FOR PAL I SYSTEM
** WILL BE USED FOR PAL I SYSTEM

FUNCTION: POWER

CAPACITORS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: MAIN CHASSIS				
621005051041	C101	CAP.M.POLY SAFE	0.10 UF 20% 250 VAC	C10	
621005051041	C102	CAP.M.POLY SAFE	0.10 UF 20% 250 VAC	C10	
040040172221	C103	CAP.CERAMIC	2200 PF 10% 2 KV B	C5	
040040172221	C104	CAP.CERAMIC	2200 PF 10% 2 KV B	C5	
042719901071	C105	CAP.AL.ELECT.	100 UF 20% 400 V	C11	
621003133331	C106	CAP.M.POLYESTER	0.033 UF 5% 630 V	C10	
040040191021	C107	CAP.CERAMIC	1000 PF 10% 2 KV B	C8	
042416501051	C109	CAP.ELECT.	1 UF 20% 50 V	C2	
621004003321	C110	CAP.M.POLYESTER	0.0033UF 10% 50 V	C2	
621005006821	C111	CAP.M.POLYESTER	0.0068UF 20% 50 V	C1	
042447164761	C112	CAP.ELECT.	47 UF 20% 16 V	C2	
621004002241	C113	CAP.M.POLYESTER	0.22 UF 10% 50 V	C4	
040040174711	C114	CAP.CERAMIC	470 PF 10% 2 KV B	C6	
040040174711	C115	CAP.CERAMIC	470 PF 10% 2 KV B	C6	
040040202221	C116	CAP.CERAMIC DISC	2200 PF 10% 4 KV B	C10	
042440251081	C117	CAP.ELECT.	1000 UF 20% 25 V	C9	
040040174711	C118	CAP.CERAMIC	470 PF 10% 2 KV B	C6	
042419834761	C119	CAP.ELECT.	47 UF 20% 160 V	C10	
042140164771	C120	CAP.ELECT.	470 UF 20% 16 V	C5	
042412161081	C121	CAP.ELECT.	1000 UF 20% 16 V	C8	
040070021031	C123	CAP.CERAMIC	100 NF +80-20% 25 V F	C2	
042447164761	C124	CAP.ELECT.	47 UF 20% 16 V	C2	
042416502261	C125	CAP.ELECT.	22 UF 20% 50 V	C2	
040070041031	C126	CAP.CERAMIC	10 NF +80-20% 50 V F	C1	
042417162271	C128	CAP.ELECT.	220 UF 20% 16 V	C2	
040040174711	C129	CAP.CERAMIC	470 PF 10% 2 KV B	C6	
042412161081	C130	CAP.ELECT.	1000 UF 20% 16 V	C8	
042417162271	C131	CAP.ELECT.	220 UF 20% 16 V	C2	

RESISTORS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: MAIN CHASSIS				
032053656921	R101	RES.CER.INSULATED	5.6 R 5 W	R5	
030208668311	R102	RES.M.O.FILM	68 K 5% 2 W	R3	
030208668311	R103	RES.M.O.FILM	68 K 5% 2 W	R3	
030020622131	R105	RES.CAR.FILM	220 R 5% 1/4 W	R1	
030020682231	R106	RES.CAR.FILM	8.2 K 5% 1/4 W	R1	
030020647031	R107	RES.CAR.FILM	47 R 5% 1/4 W	R1	
030020622411	R108	RES.CAR.FILM	220 K 5% 1/4 W	R1	
030020633411	R109	RES.CAR.FILM	330 K 5% 1/4 W	R1	
030020633231	R110	RES.CAR.FILM	3.3 K 5% 1/4 W	R1	
030020647031	R111	RES.CAR.FILM	47 R 5% 1/4 W	R1	
030020651911	R112	RES.CAR.FILM	5.1 R 5% 1/4 W	R1	
030020610331	R114	RES.CAR.FILM	10 K 5% 1/4 W	R1	
030055722811	R125	RES.M.FILM FUSING	0.22 R 5% 0.5 W	R3	
030108647311	R127	RES.M.O.FILM	47 K 5% 1 W	R3	
030055722811	R128	RES.M.FILM FUSING	0.22 R 5% 0.5 W	R3	
030205610011	R131	RES.FUSING	10 R 5% 2 W	R2	
030108712311	R132	RES.M.O.FILM	12 K 5% 1 W	R3	

FUNCTION: POWER

030108633911	R133	RES.M.O.FILM	3.3 R 5% 1 W	R3	

TRANSISTORS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: MAIN CHASSIS				
046933000001	Q101	TRANSISTOR	STH5N80 150W	Q6	*

DIODE

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: MAIN CHASSIS				
048320915221	D101	DIODE,BRIDGE	1.2 A 600 V	D7	
048000000021	D102	DIODE	BYV 95C	D4	
048000000011	D103	DIODE	BYD 33D	D3	*
048000000011	D104	DIODE	BYD 33D	D3	
048000000011	D105	DIODE	BYD 33D	D3	
048000000021	D111	DIODE	BYV 95C	D4	*
048000000021	D112	DIODE	BYV 95C	D4	
048000000021	D113	DIODE	BYV 95C	D4	
048000000141	D114	DIODE,TEMP.COMP.ZENER	UPC574J	D5	*

INTEGRATED CIRCUITS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: MAIN CHASSIS				
045018113191	IC101	IC	L7812	IC1	
045018113181	IC102	IC	L7808 8V 1A	IC1	
045238103081	IC103	IC	L7805 5V 1A	IC1	
045000000761	IC104	IC	TDA 4605	IC4	*

COILS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: MAIN CHASSIS				
608780002411	EM112	COIL	FILTER 3.5X10X1.3 H	CO3	
608380002361	L101	COIL,CHOKE	150 UH	CO3	
608380000031	L102	COIL,CHOKE	40 UH	CO5	

FUNCTION: POWER

TRIMPOTS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: MAIN CHASSIS				
611380105021	VR101	TRIMPOT	5 K 20% 0.5W VERT.PT6V	VR1	

POSISTORS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: MAIN CHASSIS				
034710303631	EM107	POSISTOR	PTH451A102BG180M29	PS1	*

FILTERS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: MAIN CHASSIS				
606980003721	EM104	FILTER,LINE	ELF-18D615	FL5	

FUSES

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: MAIN CHASSIS				
067420001811	EM103	FUSE,SLOW	3.15 A / 250 V	F1	

HARNESS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: ON-OFF BLOCK				
002099502001	EM102	HARNESS ASS'Y 2P,1 CNN	BROWN/BLUE (MAINS) 70c	HR3	
	POSITION: TUBE				
002021000301	EM108	HARNESS ASS'Y 2P,1CNN	BLACK/WHITE (DEGAUS.) 35	HR2	

FUNCTION: POWER

CONNECTORS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: MAIN CHASSIS				
075100211021	EM102	CONNECTOR 2P	5285-02A(MAINS)	CN1	
075100211781	EM108	CONNECTOR 2P	5287-02A(DEGAUS)	CN1	

POWER CORDS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: ON-OFF BLOCK				
002528554031	EM101	POWER CORD *	AC CORD 2X500 UH	PW1	
002528503000	EM101	POWER CORD **	LTBS 0.75 SQM 3M W/O PLU	PW2	

NOTE: * WILL NOT BE USED FOR PAL I SYSTEM
** WILL BE USED FOR PAL I SYSTEM

TRANSFORMER

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: MAIN CHASSIS				
602470003350	EM111	TRANSFORMER	SMPS	SP1	

ON-OFF SWITCH

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: ON-OFF BLOCK				
---	---	SWITCH *	ON-OFF FOR 20" CTV	SW2	
---	---	SWITCH *	ON-OFF FOR 21" CTV	SW2	

NOTE: * MUST BE ORDERED BY BEING WRITTEN CTV MODEL NAME

FUNCTION: DRIVE

CAPACITORS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: MAIN CHASSIS				
040040141011	C576	CAP.CERAMIC	100 PF 10% 500 V B	C2	
040070041021	C577	CAP.CERAMIC	1 NF +80-20% 50 V F	C1	
040070042231	C578	CAP.CERAMIC	22 NF +80-20% 50 V F	C1	
042416351081	C579	CAP.ELECT.	1000 UF 20% 35 V	C10	
042446351071	C580	CAP.ELECT.	100 UF 20% 35 V	C3	
042194504751	C581	CAP.ELECT.	4.7 UF 20% 50 V	C2	
042412161081	C582	CAP.ELECT.	1000 UF 20% 16 V	C8	
621004001041	C583	CAP.M.POLYESTER	0.1 UF 10% 50 V	C2	
040070042021	C586	CAP.CERAMIC	2 NF +80-20% 50 V F	C1	
040040174711	C587	CAP.CERAMIC	470 PF 10% 2 KV B	C6	
042414861051	C590	CAP.ELECT.	1 UF 20% 250 V	C3	
619305204741	C591	CAP.POLYPROPYLENE	470 NF 10% 200 V	C10	
040040156811	C592	CAP.CERAMIC	680 PF 10% 1 KV B	C6	
042414861051	C593	CAP.ELECT.	1 UF 20% 250 V	C3	
040040191021	C597	CAP.CERAMIC	1000 PF 10% 2 KV B	C7	*
042446164751	C598	CAP.ELECT.	4.7 UF 20% 16 V	C1	
042446161061	C599	CAP.ELECT.	10 UF 20% 16 V	C2	
040040142211	C600	CAP.CERAMIC	220 PF 10% 500 V B	C2	*
042447164761	C610	CAP.ELECT.	47 UF 20% 16 V	C2	
042419834761	C611	CAP.ELECT.	47 UF 20% 160 V	C10	
040040152211	CDX	CAP.CERAMIC DISC	2200 PF 10% 1 KV B	C8	*
	POSITION: MAIN CHASSIS				
619323776821	C595	CAP.POLYPROPYLENE *	6.8 NF 3.5% 1600 V	C10	*
619304776221	C595	CAP.POLYPROPYLENE **	8.2 NF 3.5% 1600 V	C10	*

NOTE: * WILL BE USED ONLY FOR 21" TUBE
** WILL BE USED ONLY FOR 20" TUBE

RESISTORS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: MAIN CHASSIS				
030020633231	R576	RES.CAR.FILM	3.3 K 5% 1/4 W	R1	
030059610231	R578	RES.NONFLAMABLE C.FILM	1 K 5% 1/2 W	R2	
030059656111	R579	RES.NONFLAMABLE C.FILM	560 R 5% 1/2 W	R2	
030020618331	R581	RES.CAR.FILM	18 K 5% 1/4 W	R1	
030020647031	R582	RES.CAR.FILM	47 R 5% 1/4 W	R1	
030108615911	R583	RES.M.O.FILM	1.5 R 5% 1 W	R3	
030020656331	R584	RES.CAR.FILM	56 K 5% 1/4 W	R1	
030020618111	R585	RES.CAR.FILM	180 R 5% 1/4 W	R1	
030020618331	R586	RES.CAR.FILM	18 K 5% 1/4 W	R1	
030020610331	R587	RES.CAR.FILM	10 K 5% 1/4 W	R1	
030059622111	R589	RES.NONFLAMABLE C.FILM	220 R 5% 1/2 W	R2	
030020647231	R596	RES.CAR.FILM	4.7 K 5% 1/4 W	R1	
030020682011	R597	RES.CAR.FILM	82 R 5% 1/4 W	R1	
030208610311	R598	RES.M.O.FILM	10 K 5% 2 W	R3	
032053620211	R599	RES.CER.INSULATED	2 K 5 W	R5	

FUNCTION: DRIVE

032053656921	R601	RES.CER.INSULATED	5.6 R 5 W	R5
030020647231	R602	RES.CAR.FILM	4.7 K 5% 1/4 W	R1
030218610211	R603	RES.M.O.FILM	1 K 5% 3 W	R4
030020633331	R604	RES.CAR.FILM	33 K 5% 1/4 W	R1
030020682231	R606	RES.CAR.FILM	8.2 K 5% 1/4 W	R1
030020610231	R609	RES.CAR.FILM	1 K 5% 1/4 W	R1
030105647811	R610	RES.M.FILM FUSING	0.47 R 5% 1 W	R3
030020610331	R619	RES.CAR.FILM	10 K 5% 1/4 W	R1
030058639011	RDX	RES.M.O.FILM	39 R 5% 1/2 W	R3

TRANSISTORS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: MAIN CHASSIS				
046932183031	Q580	TRANSISTOR	BUH 515 D 6A 1500 V	Q5	*
046000000051	Q581	TRANSISTOR	2SC1573A	Q4	*
046014055311	Q587	TRANSISTOR	JC 547 A	Q1	

DIODE

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: MAIN CHASSIS				
048000000011	D578	DIODE	BYD 33D	D3	*
048000000021	D582	DIODE	BYV 95C	D4	*
048000000021	D583	DIODE	BYV 95C	D4	*
048000000021	D585	DIODE	BYV 95C	D4	*
048548637001	D584	DIODE,ZENER	9.1V 0.5 W 5%	D6	*

INTEGRATED CIRCUITS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: MAIN CHASSIS				
045190083471	IC577	IC	LA 7830	IC2	*

COILS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: MAIN CHASSIS				
608780002411	EM578	COIL	FILTER 3.5x10x1.3 H	CO3	
608780002411	EM579	COIL	FILTER 3.5x10x1.3 H	CO3	
608980004051	L576	COIL	50 UH LINEARITY	CO5	

FUNCTION: DRIVE

TRIMPOTS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: MAIN CHASSIS				
611340015001	VR576	TRIMPOT,CARBON	500 R 20% 0.5W VERT.PT6H	VR1	

CONNECTORS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: MAIN CHASSIS				
075030261001	EM575	CONNECTOR 2P	5283-02A (HORIZ)	CN1	
075030211001	EM576	CONNECTOR 2P	5279-02A (VERT)	CN1	
075030211011	WC577	CONNECTOR 2P	2P	CN1	
075030411011	WC576	CONNECTOR 4P	4P (3P)	CN2	
002042000031	WC576	WIRE CONNECTOR	4 (3P) PIN W 2 CNN.	CN1	

HARNESS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: TUBE				
002344500021		HARNESS ASS'Y 2P,1 CNN	BROWN/BLACK (VERTICAL)	HR1	
002344500031		HARNESS ASS'Y 2P,1 CNN	RED/WHITE(HORIZONTAL)	HR2	

SWITCHS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: MAIN CHASSIS				
081000000061	SW576	SWITCH	LEVER 1P2T	SW1	

TRANSFORMERS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: MAIN CHASSIS				
602300033051	EM577	TRANSFORMER	HORIZONTAL DRIVE	TRF1	*
	POSITION: MAIN CHASSIS				
604200000230	EM580	TRANSFORMER	FLYBACK	TRF3	*

FUNCTION: CPU

CAPACITORS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: MAIN CHASSIS				
618013002231		CAP.POLYESTER	0.022 UF 5% 50 V	C2	
040070041021		CAP.CERAMIC	1 NF +80-20% 50 V F	C1	
042184502251	C477	CAP.ELECT.	2.2 UF 20% 50 V	C1	
042184502251	C478	CAP.ELECT.	2.2 UF 20% 50 V	C1	
042184502251	C479	CAP.ELECT.	2.2 UF 20% 50 V	C1	
040042042201	C482	CAP.CERAMIC	22 PF 10% 50 V CH	C1	
040042042201	C483	CAP.CERAMIC	22 PF 10% 50 V CH	C1	
040042042201	C484	CAP.CERAMIC	22 PF 10% 50 V CH	C1	
040042042201	C485	CAP.CERAMIC	22 PF 10% 50 V CH	C1	
621004004731	C486	CAP.M.POLYESTER	0.047 UF 10% 50 V	C2	
621004001041	C487	CAP.M.POLYESTER	0.1 UF 10% 50 V	C2	
040032041801	C488	CAP.CERAMIC	18 PF 5% 50 V CH	C1	
040032041801	C489	CAP.CERAMIC	18 PF 5% 50 V CH	C1	
042446164751	C490	CAP.ELECT.	4.7 UF 20% 16 V	C1	
040070041031	C491	CAP.CERAMIC	10 NF +80-20% 50 V F	C1	
040070021031	C493	CAP.CERAMIC	100 NF +80-20% 25 V F	C2	
042417162271	C494	CAP.ELECT.	220 UF 20% 16 V	C2	
042140161071	C496	CAP.ELECT.	100 UF 20% 16 V	C2	
040040041011	C497	CAP.CERAMIC	100 PF 10% 50 V SL	C1	
040070041031	C498	CAP.CERAMIC	10 NF +80-20% 50 V F	C1	

RESISTORS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION:				
030020610331	R476	RES.CAR.FILM	10 K 5% 1/4 W	R1	
030020633231	R477	RES.CAR.FILM	3.3 K 5% 1/4 W	R1	
030020610131	R479	RES.CAR.FILM	100 R 5% 1/4 W	R1	
030020612331	R480	RES.CAR.FILM	12 K 5% 1/4 W	R1	
030020656231	R481	RES.CAR.FILM	5.6 K 5% 1/4 W	R1	
030020610231	R482	RES.CAR.FILM	1 K 5% 1/4 W	R1	
030020682331	R483	RES.CAR.FILM	82 K 5% 1/4 W	R1	
030020622331	R484	RES.CAR.FILM	22 K 5% 1/4 W	R1	
030020615331	R485	RES.CAR.FILM	15 K 5% 1/4 W	R1	
030020668311	R486	RES.CAR.FILM	68 K 5% 1/4 W	R1	
030020615331	R487	RES.CAR.FILM	15 K 5% 1/4 W	R1	
030020615331	R488	RES.CAR.FILM	15 K 5% 1/4 W	R1	
030020647331	R489	RES.CAR.FILM	47 K 5% 1/4 W	R1	
030020610411	R490	RES.CAR.FILM	100 K 5% 1/4 W	R1	
030020610231	R494	RES.CAR.FILM	1 K 5% 1/4 W	R1	
030020610231	R496	RES.CAR.FILM	1 K 5% 1/4 W	R1	
030020610231	R498	RES.CAR.FILM	1 K 5% 1/4 W	R1	
030020622411	R499	RES.CAR.FILM	220 K 5% 1/4 W	R1	
030020610411	R500	RES.CAR.FILM	100 K 5% 1/4 W	R1	
030020610231	R501	RES.CAR.FILM	1 K 5% 1/4 W	R1	
030020610231	R511	RES.CAR.FILM	1 K 5% 1/4 W	R1	
030020615231	R512	RES.CAR.FILM	1.5 K 5% 1/4 W	R1	
030020615231	R514	RES.CAR.FILM	1.5 K 5% 1/4 W	R1	
030020615231	R516	RES.CAR.FILM	1.5 K 5% 1/4 W	R1	
030020675011	R518	RES.CAR.FILM	75 R 5% 1/4 W	R1	
030020618331	R520	RES.CAR.FILM	18 K 5% 1/4 W	R1	

FUNCTION: CPU

030020610331	R521	RES.CAR.FILM	10 K 5% 1/4 W	R1
030020610331	R522	RES.CAR.FILM	10 K 5% 1/4 W	R1
030020610331	R523	RES.CAR.FILM	10 K 5% 1/4 W	R1
030020610331	R525	RES.CAR.FILM	10 K 5% 1/4 W	R1
030020647131	R526	RES.CAR.FILM	470 R 5% 1/4 W	R1
030020610331	R527	RES.CAR.FILM	10 K 5% 1/4 W	R1
030020610511	R528	RES.CAR.FILM	1 M 5% 1/4 W	R1
030020610231	R529	RES.CAR.FILM	1 K 5% 1/4 W	R1
030020610131	R533	RES.CAR.FILM	100 R 5% 1/4 W	R1
030020633231	R534	RES.CAR.FILM	3.3 K 5% 1/4 W	R1
030020610131	R535	RES.CAR.FILM	100 R 5% 1/4 W	R1
030020633231	R536	RES.CAR.FILM	3.3 K 5% 1/4 W	R1
030020610131	R537	RES.CAR.FILM	100 R 5% 1/4 W	R1
030020622231	R538	RES.CAR.FILM	2.2 K 5% 1/4 W	R1
030020620311	R544	RES.CAR.FILM	20 K 5% 1/4 W	R1
030020610131	R545	RES.CAR.FILM	100 R 5% 1/4 W	R1
030020610131	R546	RES.CAR.FILM	100 R 5% 1/4 W	R1
030020620311	R548	RES.CAR.FILM	20 K 5% 1/4 W	R1
030020610331	R549	RES.CAR.FILM	10 K 5% 1/4 W	R1
030020622331	R550	RES.CAR.FILM	22 K 5% 1/4 W	R1

POSITION: MAIN CHASSIS

030020647331	R495	RES.CAR.FILM *	47 K 5% 1/4 W	R1
030020647331	R497	RES.CAR.FILM *	47 K 5% 1/4 W	R1

NOTE: * WILL NOT BE USED FOR PAL I SYSTEM

TRANSISTORS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: MAIN CHASSIS				
046466074281		TRANSISTOR	BC 548 B	Q1	
046000022101	Q476	TRANSISTOR	PH2369	Q2	
046014055311	Q479	TRANSISTOR	JC 547 A	Q1	
046014055311	Q482	TRANSISTOR	JC 547 A	Q1	
046014055311	Q483	TRANSISTOR	JC 547 A	Q1	
046014055311	Q484	TRANSISTOR	JC 547 A	Q1	
046014055311	Q485	TRANSISTOR	JC 547 A	Q1	
	POSITION: MAIN CHASSIS				
046014055311	Q477	TRANSISTOR *	JC 547 A	Q1	
046014055311	Q478	TRANSISTOR *	JC 547 A	Q1	

NOTE: * WILL NOT BE USED FOR PAL I SYSTEM

FUNCTION: CPU

DIODE

POSITION: MAIN CHASSIS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
048210411001	D477	DIODE	1N4148	D1	
048210411001	D479	DIODE	1N4148	D1	
048210411001	D482	DIODE	1N4148	D1	
048210411001	D487	DIODE	1N4148	D1	
048210411001	D488	DIODE	1N4148	D1	
048210411001	D489	DIODE	1N4148	D1	
048210411001	D490	DIODE	1N4148	D1	
048210411001	D491	DIODE	1N4148	D1	
048210411001	D494	DIODE	1N4148	D1	
048210411001	D495	DIODE	1N4148	D1	
048210411001	D496	DIODE	1N4148	D1	
048210411001	D497	DIODE	1N4148	D1	
048210411001	D498	DIODE	1N4148	D1	
048210411001	D499	DIODE	1N4148	D1	

POSITION: MAIN CHASSIS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
048210411001	D486	DIODE *	1N4148	D1	
048210411001	D486	DIODE **	1N4148	D1	

NOTE: * WILL BE USED FOR SECAML SYSTEM
** WILL BE USED FOR D/K SYSTEM

INTEGRATED CIRCUITS

POSITION: MAIN CHASSIS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
045101070211	IC476	IC	PCA84C841 P /CTV 352S	IC10	*

POSITION: MAIN CHASSIS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
045000000061	IC477	IC *	PCF 8582P	IC3	*
045000000811	IC477	IC **	PCF 8594E		

NOTE: * WILL NOT BE USED FOR LIST MODE
** WILL BE USED FOR FLOF+LIST MODE

FUNCTION: CPU

COILS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: MAIN CHASSIS				
608980000101	L476	COIL,AXIAL FIXED	12 UH J	CO2	

CRYSTALS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: MAIN CHASSIS				
049030000151	EM476	CRYSTAL	10.00 MHz	CR1	*

CONNECTORS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: MAIN CHASSIS				
075030411001	WC477	CONNECTOR 4P	4P	CN2	
002042000041	WC477	WIRE CONNECTOR	4 PIN WIRE CON.W 2 CNN.	CN1	

FUNCTION: CRT

CAPACITORS

POSITION: TUBE

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
040040032211	C51	CAP.CERAMIC	220 PF 10% 50 V B	C1	
040040032211	C52	CAP.CERAMIC	220 PF 10% 50 V B	C1	
040042045611	C53	CAP.CERAMIC	560 PF 10% 50 V B	C1	
040040191021	C57	CAP.CERAMIC	1000 PF 10% 2 KV B	C7	
040040191021	C58	CAP.CERAMIC	1000 PF 10% 2 KV B	C7	
042140164771	C54	CAP.ELECT.	470 UF 20% 16 V	C5	
042440861061	C55	CAP.ELECT.	10 UF 20% 250 V	C9	
042446862251	C56	CAP.ELECT.	2.2 UF 20% 250 V	C4	

RESISTORS

POSITION:TUBE

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
030020639131	R51	RES.CAR.FILM	390 R 5% 1/4 W	R1	
030020682111	R54	RES.CAR.FILM	820 R 5% 1/4 W	R1	
030020633231	R55	RES.CAR.FILM	3.3 K 5% 1/4 W	R1	
030020647131	R56	RES.CAR.FILM	470 R 5% 1/4 W	R1	
030020610131	R57	RES.CAR.FILM	100 R 5% 1/4 W	R1	
030020639131	R58	RES.CAR.FILM	390 R 5% 1/4 W	R1	
030020633231	R61	RES.CAR.FILM	3.3 K 5% 1/4 W	R1	
030020647131	R62	RES.CAR.FILM	470 R 5% 1/4 W	R1	
030020610131	R63	RES.CAR.FILM	100 R 5% 1/4 W	R1	
030020668111	R64	RES.CAR.FILM	680 R 5% 1/4 W	R1	
030020639131	R65	RES.CAR.FILM	390 R 5% 1/4 W	R1	
030020633231	R68	RES.CAR.FILM	3.3 K 5% 1/4 W	R1	
030020647131	R69	RES.CAR.FILM	470 R 5% 1/4 W	R1	
030020610131	R70	RES.CAR.FILM	100 R 5% 1/4 W	R1	
030020668111	R71	RES.CAR.FILM	680 R 5% 1/4 W	R1	
030020633231	R72	RES.CAR.FILM	3.3 K 5% 1/4 W	R1	
030020622511	R73	RES.CAR.FILM	2.2 M 5% 1/4 W	R1	
030020615231	R74	RES.CAR.FILM	1.5 K 5% 1/4 W	R1	
030020610331	R75	RES.CAR.FILM	10 K 5% 1/4 W	R1	
030020610331	R76	RES.CAR.FILM	10 K 5% 1/4 W	R1	
030020610331	R77	RES.CAR.FILM	10 K 5% 1/4 W	R1	
030208610311	R53	RES.M.O.FILM	10 K 5% 2 W	R3	
030208610311	R60	RES.M.O.FILM	10 K 5% 2 W	R3	
030208610311	R67	RES.M.O.FILM	10 K 5% 2 W	R3	
030059627211	R52	RES.NONFLAMABLE C.FIL	2.7 K 5% 1/2 W	R2	
030059627211	R59	RES.NONFLAMABLE C.FIL	2.7 K 5% 1/2 W	R2	
030059627211	R66	RES.NONFLAMABLE C.FIL	2.7 K 5% 1/2 W	R2	

FUNCTION: CRT

TRANSISTORS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION:				
046472261011	Q51	TRANSISTOR	BF 869	Q4	*
046472261011	Q52	TRANSISTOR	BF 869	Q4	
046472261011	Q53	TRANSISTOR	BF 869	Q4	

DIODE

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION:				
048321423201	D51	DIODE,RECTIFIER	1N4007	D2	

COILS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: TUBE				
608000002781	L51	COIL,AXIAL FIXED	150 UH J	D7	

TRIMPOTS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: TUBE				
611380101031	VR51	TRIMPOT,CARBON	10 K 20% 0.5W HORZ.PT6V	VR1	
611380101031	VR52	TRIMPOT,CARBON	10 K 20% 0.5W HORZ.PT6V	VR1	
611340015011	VR53	TRIMPOT,CARBON	500R 20% 0.5W HORZ.PT6V	VR1	
611380101031	VR54	TRIMPOT,CARBON	10 K 20% 0.5W HORZ.PT6V	VR1	
611340015011	VR55	TRIMPOT,CARBON	500R 20% 0.5W HORZ.PT6V	VR1	

FUNCTION: CRT

CONNECTORS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: TUBE				
075030511001	WC51	CONNECTOR 5P	5P	CN2	
075030411011	WC52	CONNECTOR 4P	4P (3P)	CN2	
	POSITION: MAIN CHASSIS				
002052000401	WC51	WIRE CONNECTOR	5 PIN WIRE CON.W 2 CNN.	CN1	

CRT SOCKETS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: TUBE				
075020800031	SK51	SOCKET, CRT 20-21"	29 MM	CSC1	*

A/V FUNCTION

FUNCTION: A/V

CAPACITORS

POSITION: MAIN CHASSIS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
040070041031	C676	CAP.CERAMIC	10 NF +80-20% 50 V F	C1	
040040042201	C690	CAP.CERAMIC	22 PF 10% 50 V SL	C1	
040040042201	C695	CAP.CERAMIC	22 PF 10% 50 V SL	C1	
042446161061	C801	CAP.ELECT. *	10 UF 20% 16 V	C2	
042446161061	C802	CAP.ELECT. *	10 UF 20% 16 V	C2	

NOTE: * MAY BE PLACED ON MINI PCB

RESISTORS

POSITION: TXT BOARD

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
030020610231	R718	RES.CAR.FILM	1 K 5% 1/4 W	R1	
030020610231	R719	RES.CAR.FILM	1 K 5% 1/4 W	R1	

POSITION: MAIN CHASSIS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
030020668111	L676	RES.CAR.FILM	680 R 5% 1/4 W	R1	
030020668111	L678	RES.CAR.FILM	680 R 5% 1/4 W	R1	
030020675011	R670	RES.CAR.FILM	75 R 5% 1/4 W	R1	
030020675011	R672	RES.CAR.FILM	75 R 5% 1/4 W	R1	
030020647331	R676	RES.CAR.FILM	47 K 5% 1/4 W	R1	
030020675011	R694	RES.CAR.FILM	75 R 5% 1/4 W	R1	
030020668111	R695	RES.CAR.FILM	680 R 5% 1/4 W	R1	
030020633331	R696	RES.CAR.FILM	33 K 5% 1/4 W	R1	
030020633331	R697	RES.CAR.FILM	33 K 5% 1/4 W	R1	
030020668111	R701	RES.CAR.FILM	680 R 5% 1/4 W	R1	
030020668111	R703	RES.CAR.FILM	680 R 5% 1/4 W	R1	
030020675011	R704	RES.CAR.FILM	75 R 5% 1/4 W	R1	
030020675011	R706	RES.CAR.FILM	75 R 5% 1/4 W	R1	
030020610231	R707	RES.CAR.FILM	1 K 5% 1/4 W	R1	
030020675011	R708	RES.CAR.FILM	75 R 5% 1/4 W	R1	
030020668111	R709	RES.CAR.FILM	680 R 5% 1/4 W	R1	
030020668211	R712	RES.CAR.FILM	6.8 K 5% 1/4 W	R1	
030020610231	R716	RES.CAR.FILM	1 K 5% 1/4 W	R1	
030020618231	R720	RES.CAR.FILM	1.8 K 5% 1/4 W	R1	
030020622131	R721	RES.CAR.FILM	220 R 5% 1/4 W	R1	
030020610131	R761	RES.CAR.FILM *	100 R 5% 1/4 W	R1	
030020622231	R762	RES.CAR.FILM *	2.2 K 5% 1/4 W	R1	
030020633331	R801	RES.CAR.FILM *	33 K 5% 1/4 W	R1	
030020647231	R802	RES.CAR.FILM *	4.7 K 5% 1/4 W	R1	
030020682231	R803	RES.CAR.FILM *	8.2 K 5% 1/4 W	R1	
030020633331	R804	RES.CAR.FILM *	33 K 5% 1/4 W	R1	
030020615231	R805	RES.CAR.FILM *	1.5 K 5% 1/4 W	R1	
030020647131	R806	RES.CAR.FILM *	470 R 5% 1/4 W	R1	

NOTE: * MAY BE PLACED ON MINI PCB

FUNCTION: A/V

TRANSISTORS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: MAIN CHASSIS				
046014055311	Q676	TRANSISTOR	JC 547 A	Q1	
046014055311	Q677	TRANSISTOR	JC 547 A	Q1	
046014055311	Q678	TRANSISTOR	JC 547 A	Q1	
046014055311	Q681	TRANSISTOR	JC 547 A	Q1	
046014055311	Q728	TRANSISTOR *	JC 547 A	Q1	
046014055311	Q801	TRANSISTOR *	JC 547 A	Q1	
046014055311	Q802	TRANSISTOR *	JC 547 A	Q1	

NOTE: * MAY BE PLACED ON MINI PCB

DIODE

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: MAIN CHASSIS				
048210411001	D700	DIODE	1N4148	D1	
048210411001	D801	DIODE *	1N4148	D1	
048210411001	D802	DIODE *	1N4148	D1	

NOTE: * MAY BE PLACED ON MINI PCB

COILS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: MAIN CHASSIS				
608080000191	L680	COIL,AXIAL FIXED	8.2 UH J	CO3	

FUNCTION: REMOTE OPERATION

CAPACITORS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: REMOTE SENSOR				
042446251061	–	CAP.ELECT.	10 UF 50-10% 25 V	C2	

RESISTORS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: REMOTE SENSOR				
030020615231	–	RES.CAR.FILM	1.5 K 5% 1/4 W	R1	
030020647031	–	RES.CAR.FILM	47 R 5% 1/4 W	R1	

DIODE

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: PREAMP. BLOCK				
048775009031	D501	DIODE,LED	ST-BY RED/GR LTL-332W1J	D7	
048701002021	D501	DIODE,LED	LTL-10CHJ RED / GREEN	D6	

PREAMPLIFIER

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: REMOTE SENSOR				
609330001111	EM477	PREAMPLIFIER *	LTM-9160A-36 *	PR1	*
609330001081	EM477	PREAMPLIFIER **	LTM 9052AB-3 36KHZ BLACK	PR1	*

NOTE: * WILL BE USED ONLY FOR SONY VIEW

WARNING: ** HAS ONLY ONE CODE BUT TWO DIFFERENT TYPE THEREFORE USE WHOLE DESCRIPTION WHICH PRINTED ON PART.

REMOTE SENSOR PCB

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: REMOTE SENSOR				
614091000160	–	PREAMP. PCB (EMPTY)	REMOTE AND SENSOR BOARD	PC1	

FUNCTION: REMOTE OPERATION

CONNECTORS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: REMOTE SENSOR				
002041000701	WC476	WIRE CONNECTOR	4 PIN WIRE CON.W 2CNN	CN1	
075030411001	WC476	CONNECTOR 4P	4P	CN2	
075030411001	WC476	CONNECTOR 4P	4P	CN2	

FUNCTION: SOUND SYSTEM

CAPACITORS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION:TXT BOARD				
042184502251	C336	CAP.ELECT. *	2.2 UF 20% 50 V	C1	
042184502251	C337	CAP.ELECT. *	2.2 UF 20% 50 V	C1	
042184502251	C338	CAP.ELECT. *	2.2 UF 20% 50 V	C1	
040070041031	C339	CAP.CERAMIC *	10 NF +80-20% 50 V F	C1	
042140161071	C340	CAP.ELECT. *	100 UF 20% 16 V	C2	

NOT: * WILL NOT BE USED FOR SECAML AND PALI SYSTEMS

RESISTORS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: TXT BOARD				
030020622131	R331	RES.CAR.FILM **	220 R 5% 1/4 W	R1	
030020610231	R334	RES.CAR.FILM *	1 K 5% 1/4 W	R1	
030020610231	R335	RES.CAR.FILM **	1 K 5% 1/4 W	R1	
030020647231	R336	RES.CAR.FILM **	4.7 K 5% 1/4 W	R1	
030020627331	R337	RES.CAR.FILM **	27 K 5% 1/4 W	R1	
030020610231	R339	RES.CAR.FILM **	1 K 5% 1/4 W	R1	

NOT: * WILL BE USED FOR D/K SYSTEM
** WILL NOT BE USED FOR SECAML AND PALI SYSTEMS

INTEGRATED CIRCUITS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: TXT BOARD				
045000000741	IC327	IC *	TDA 9820	IC6	*

NOT: * WILL NOT BE USED FOR SECAML AND PALI SYSTEMS

FUNCTION: SOUND SYSTEM

FILTERS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: TXT BOARD				
037730008211	FI329	FILTER,CERAMIC **	5.5 MHz SFE 5.5 MB	FL2	
049030000531	FI330	FILTER,CERAMIC *	6.5 MHz SFE 6.5 MB	FL4	
037720007841	FI332	FILTER,CERAMIC **	5.74 MHz SFE 5.74MB	FL3	

NOT: * WILL BE USED FOR D/K SYSTEM
** WILL NOT BE USED FOR SECAML AND PALI SYSTEMS

TRIMPOTS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: TXT BOARD				
611340011021	VR326	TRIMPOT *	1 K 20% 0.5W VERT.PT6V	VR1	

NOTE: * WILL NOT BE USED FOR SECAML AND PALI SYSTEMS

CONNECTORS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: MAIN CHASSIS				
002022000011	WC326	WIRE CONNECTOR *	2 PIN WIRE CON.W 2 CNN.	CN1	
075030211011	WC326	CONNECTOR 2P *	2P	CN1	
075030211011	WC327	CONNECTOR 2P *	2P	CN1	

NOT: * WILL NOT BE USED FOR PALI SYSTEM

FUNCTION: AUDIO

CAPACITORS

TELRA_NO	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: TXT BOARD				
040070041021	C401	CAP.CERAMIC	1 NF +80-20% 50 V F	C1	
621004002241	C402	CAP.M.POLYESTER	0.22 UF 10% 50 V	C4	
042140161071	C403	CAP.ELECT.	100 UF 20% 16 V	C2	
040070041021	C404	CAP.CERAMIC	1 NF +80-20% 50 V F	C1	
621004002241	C405	CAP.M.POLYESTER	0.22 UF 10% 50 V	C4	
040070021031	C406	CAP.CERAMIC	100 NF +80-20% 25 V F	C2	
042417162271	C407	CAP.ELECT.	220 UF 20% 16 V	C2	
621003003331	C408	CAP.M.POLYESTER	0.033 UF 5% 50 V	C2	
621004004731	C409	CAP.M.POLYESTER	0.047 UF 10% 50 V	C2	
621004002241	C410	CAP.M.POLYESTER	0.22 UF 10% 50 V	C4	
621004002241	C411	CAP.M.POLYESTER	0.22 UF 10% 50 V	C4	
621004004731	C412	CAP.M.POLYESTER	0.047 UF 10% 50 V	C2	
621003003331	C413	CAP.M.POLYESTER	0.033 UF 5% 50 V	C2	
621004001531	C414	CAP.M.POLYESTER	0.015 UF 10% 50 V	C1	
621004001531	C417	CAP.M.POLYESTER	0.015 UF 10% 50 V	C1	
	POSITION: TWEETER				
042194504751	C437	CAP.ELECT. (FOR RIGHT)	4.7 UF 20% 50 V	C2	
042194504751	C438	CAP.ELECT. (FOR LEFT)	4.7 UF 20% 50 V	C2	
	POSITION: MAIN CHASSIS				
042140161071	C428	CAP.ELECT.	100 UF 20% 16 V	C2	
040070021031	C429	CAP.CERAMIC	100 NF +80-20% 25 V F	C2	
042412161081	C430	CAP.ELECT.	1000 UF 20% 16 V	C8	
040070021031	C431	CAP.CERAMIC	100 NF +80-20% 25 V F	C2	
042412161081	C432	CAP.ELECT.	1000 UF 20% 16 V	C8	
042410252281	C433	CAP.ELECT.	2200 UF 20% 25 V	C10	
040070021031	C434	CAP.CERAMIC	100 NF +80-20% 25 V F	C2	
040070021031	C435	CAP.CERAMIC	100 NF +80-20% 25 V F	C2	
040070021031	C436	CAP.CERAMIC	100 NF +80-20% 25 V F	C2	

RESISTORS

TELRA_NO	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: TXT BOARD				
030020610231	R401	RES.CAR.FILM	1 K 5% 1/4 W	R1	
030020610231	R402	RES.CAR.FILM	1 K 5% 1/4 W	R1	
030020610031	R403	RES.CAR.FILM	10 R 5% 1/4 W	R1	
030020610131	R406	RES.CAR.FILM	100 R 5% 1/4 W	R1	
030020610131	R407	RES.CAR.FILM	100 R 5% 1/4 W	R1	

FUNCTION: AUDIO

POSITION: MAIN CHASSIS

030059622911	R432	RES.NONFLAMABLE C.FILM	2.2 R 5% 1/2 W	R2
030059622911	R433	RES.NONFLAMABLE C.FILM	2.2 R 5% 1/2 W	R2
030020627331	R404	RES.CAR.FILM	27 K 5% 1/4 W	R1
030020627331	R408	RES.CAR.FILM	27 K 5% 1/4 W	R1
030020647331	R434	RES.CAR.FILM	47 K 5% 1/4 W	R1

INTEGRATED CIRCUITS

TELRA_NO	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: TXT BOARD				
045000000701	IC401	IC	TDA 8425	IC8	*
	POSITION: MAIN CHASSIS				
045100311401	IC426	IC	TDA 1521	IC5	*

CONNECTORS

TELRA_NO	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: TXT BOARD				
075030311021	WC732	CONNECTOR 3P	3P	CN1	
	POSITION: MAIN CHASSIS				
014110060200		WIRE CONNECTOR	4 PIN WIRE CON.W 1 CNN.	CN1	
075100411000		CONNECTOR 4P	4P	CN2	
002032000001	WC406	WIRE CONNECTOR	3 PIN WIRE CON.W 2 CNN.	CN1	
075030311021	WC406	CONNECTOR 3P	3P	CN1	

SPEAKER AND TWEETER

TELRA_NO	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: ---				
---	---	SPEAKER *	WOOFER	SP1	*
---	---	TWEETER *		SP2	*

NOTE: MUST BE ORDERED BY BEING WRITTEN CTV MODEL NAME

FUNCTION: GERMAN STEREO

CAPACITORS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: TXT BOARD				
040040042211		CAP.CERAMIC	220 PF 10% 50 V SL	C1	
042446161061	C901	CAP.ELECT. *	10 UF 20% 16 V	C2	
040070041031	C902	CAP.CERAMIC *	10 NF +80-20% 50 V F	C1	
040070021031	C903	CAP.CERAMIC *	100 NF +80-20% 25 V F	C2	
619202003321	C904	CAP.M.SYTROFLEX *	0.0033UF 2% 50 V	C2	
040041044701	C905	CAP.CERAMIC *	47 PF 10% 50 V SL	C1	
042417162271	C906	CAP.ELECT. *	220 UF 20% 16 V	C2	
042184502251	C907	CAP.ELECT. *	2.2 UF 20% 50 V	C1	
042184502251	C908	CAP.ELECT. *	2.2 UF 20% 50 V	C1	
042184502251	C911	CAP.ELECT. *	2.2 UF 20% 50 V	C1	
042184502251	C912	CAP.ELECT. *	2.2 UF 20% 50 V	C1	
040070041031	C913	CAP.CERAMIC *	10 NF +80-20% 50 V F	C1	
040070041031	C914	CAP.CERAMIC *	10 NF +80-20% 50 V F	C1	
040070021031	C915	CAP.CERAMIC *	100 NF +80-20% 25 V F	C2	
042417162271	C916	CAP.ELECT. *	220 UF 20% 16 V	C2	

NOTE: * WILL NOT BE USED FOR PAL I SYSTEM

RESISTORS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: TXT BOARD				
030020610131	R901	RES.CAR.FILM *	100 R 5% 1/4 W	R1	
030020610131	R906	RES.CAR.FILM *	100 R 5% 1/4 W	R1	

NOTE: * WILL NOT BE USED FOR PAL I SYSTEM

COILS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: TXT BOARD				
608180000111	L901	COIL,AXIEL FIXED *	2.5 MH J	CO3	

NOTE: * WILL NOT BE USED FOR PAL I SYSTEM

FUNCTION: GERMAN STEREO

INTEGRATED CIRCUITS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: TXT BOARD				
045000000751	IC901	IC *	TDA 9840	IC6	*

NOTE: * WILL NOT BE USED FOR PAL I SYSTEM

FILTERS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: TXT BOARD				
037720007841	FI351	FILTER,CERAMIC *	5.74 MHz SFE 5.74MB	FL3	

NOTE: * WILL BE USED FOR SECAML SYSTEM (GERMAN STEREO)

CRYSTALS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: TXT BOARD				
049030000151	EM901	CRYSTAL *	10.00 MHz	CR1	

NOTE: * WILL NOT BE USED FOR PAL I SYSTEM

FUNCTION: NICAM STEREO

CAPACITORS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: NICAM STEREO CIRCUIT				
040070041021	C351	CAP.CERAMIC	1 NF +80-20% 50 V F	C1	
042446164751	C353	CAP.ELECT.	4.7 UF 20% 16 V	C1	
040040042701	C355	CAP.CERAMIC	27 PF 10% 50 V SL	C1	
042414162251	C357	CAP.ELECT.	2.2 UF 20% 16 V	C2	
042414162251	C358	CAP.ELECT.	2.2 UF 20% 16 V	C2	
040070041031	C359	CAP.CERAMIC	10 NF +80-20% 50 V F	C1	
042417162271	C360	CAP.ELECT.	220 UF 20% 16 V	C2	
042446161061	C361	CAP.ELECT.	10 UF 20% 16 V	C2	
040070021031	C801	CAP.CERAMIC	100 NF +80-20% 25 V F	C2	
042447164761	C802	CAP.ELECT.	47 UF 20% 16 V	C2	
042447164761	C803	CAP.ELECT.	47 UF 20% 16 V	C2	
040070021031	C804	CAP.CERAMIC	100 NF +80-20% 25 V F	C2	
042447164761	C805	CAP.ELECT.	47 UF 20% 16 V	C2	
040070021031	C806	CAP.CERAMIC	100 NF +80-20% 25 V F	C2	
042447164761	C807	CAP.ELECT.	47 UF 20% 16 V	C2	
042447164761	C808	CAP.ELECT.	47 UF 20% 16 V	C2	
040070021031	C809	CAP.CERAMIC	100 NF +80-20% 25 V F	C2	
621004004731	C810	CAP.M.POLYESTER	0.047 UF 10% 50 V	C2	
042446161061	C811	CAP.ELECT.	10 UF 20% 16 V	C2	
042446151061	C812	CAP.ELECT.	10 UF 20% 16 V	C2	
040070021031	C813	CAP.CERAMIC	100 NF +80-20% 25 V F	C2	
040030043921	C814	CAP.CERAMIC	390 PF 10% 50 V SL	C1	
040032041001	C815	CAP.CERAMIC	10 PF 5% 50 V CH	C1	
042446161061	C816	CAP.ELECT.	10 UF 20% 16 V	C2	
040040042211	C817	CAP.CERAMIC	220 PF 10% 50 V SL	C1	
042446161061	C818	CAP.ELECT.	10 UF 20% 16 V	C2	
040070021031	C819	CAP.CERAMIC	100 NF +80-20% 25 V F	C2	
042416501051	C820	CAP.ELECT.	1 UF 20% 50 V GP	C2	
040070021031	C821	CAP.CERAMIC	100 NF +80-20% 25 V F	C2	
042447164761	C822	CAP.ELECT.	47 UF 20% 16 V	C2	
620003002231	C823	CAP.M.POLYESTER	0.022 UF 5% 50 V	C4	
620004083341	C824	CAP.M.POLYETHYLENE	330 NF 5% 63 V GP	C1	
040040041011	C825	CAP.CERAMIC	100 PF 10% 50 V SL	C1	
040040041011	C826	CAP.CERAMIC	100 PF 10% 50 V SL	C1	
040070021031	C827	CAP.CERAMIC	100 NF +80-20% 25 V F	C2	
620004074741	C828	CAP.M.POLYETHYLENE	470 NF 5% 63 V GP	C1	

RESISTORS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: NICAM STEREO CIRCUIT				
030020610131		RES.CAR.FILM	100 R 5% 1/4 W	R1	
030020610131		RES.CAR.FILM	100 R 5% 1/4 W	R1	
030020615131	R351	RES.CAR.FILM	150 R 5% 1/4 W	R1	
030020647131	R360	RES.CAR.FILM	470 R 5% 1/4 W	R1	
030020656131	R361	RES.CAR.FILM	560 R 5% 1/4 W	R1	
030020610911	R363	RES.CAR.FILM	1 R 5% 1/4 W	R1	
030020610231	R365	RES.CAR.FILM	1 K 5% 1/4 W	R1	
030020610031	R801	RES.CAR.FILM	10 R 5% 1/4 W	R1	
030020633331	R803	RES.CAR.FILM	33 K 5% 1/4 W	R1	
030020610911	R804	RES.CAR.FILM	1 R 5% 1/4 W	R1	

FUNCTION: NICAM STEREO

030020610231	R805	RES.CAR.FILM	1 K 5% 1/4 W	R1	
030020610131	R806	RES.CAR.FILM	100 R 5% 1/4 W	R1	
030020610331	R807	RES.CAR.FILM	10 K 5% 1/4 W	R1	
030020622331	R809	RES.CAR.FILM	22 K 5% 1/4 W	R1	
030020610511	R810	RES.CAR.FILM	1 M 5% 1/4 W	R1	
030020622011	R811	RES.CAR.FILM	22 R 5% 1/4 W	R1	
030020668411	R812	RES.CAR.FILM	680 K 5% 1/4 W	R1	
030020610231	R813	RES.CAR.FILM	1 K 5% 1/4 W	R1	
030020610231	R814	RES.CAR.FILM	1 K 5% 1/4 W	R1	
030020618231	R822	RES.CAR.FILM	1.8 K 5% 1/4 W	R1	

DIODE

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: NICAM STEREO CIRCUIT				
048000000191	D801	DIODE	BB405	D3	
048210411001	D802	DIODE	1N4148	D1	

INTEGRATED CIRCUITS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: NICAM STEREO CIRCUIT				
045000000351	IC328	IC	TDA 3866	IC7	*
045000000841	IC801	IC	SAA7283 ZP	IC7	*

COILS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: NICAM STEREO CIRCUIT				
608080000161	L801	COIL,AXIAL FIXED	6.8 UH J	CO2	
606280001611	T352	COIL,TOKO	7M 5.7 MHZ IFT	CO4	
608280001601	T353	COIL,TOKO	KSC 38.9 MHZ IFT	CO4	

CRYSTALS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: NICAM STEREO CIRCUIT				
049030000081	EM801	CRYSTAL	8.192 MHz	CR1	*

FUNCTION: NICAM STEREO

FILTERS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: NICAM STEREO CIRCUIT				
037720007831	FI352	FILTER,CERAMIC *	6 MHz SFE 6 MB	FL4	
037730007811	FI359	FILTER,SAW *	39.5 MHZ	FL8	
037730007841	FI329	FILTER,SAW **	38.9 MHZ (G 9251 IF)	FL8	

NOTE: * WILL BE USED ONLY FOR PAL I SYSTEM
** WILL BE USED FOR PAL B/G SYSTEM (NICAM STEREO)

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: MAIN CHASSIS				
037720007821	FI181	FILTER,CERAMIC, TRAP	6 MHz TPS 6 MB	FL4	

NOTE: * WILL BE USED ONLY FOR PAL I SYSTEM

CONNECTORS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: MAIN CHASSIS OR TXT BOARD				
075030611051		CONNEC.BOARD TO BOARD 6 PIN FEMALE 4024-06-06		CN3	
075030710871		CONNEC.BOARD TO BOARD 7 PIN FEMALE		CN3	

FUNCTION: TXT

CAPACITORS

POSITION: TXT BLOCK

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
040032041501	C728	CAP.CERAMIC	15 PF 5% 50 V CH	C1	
040070041021	C729	CAP.CERAMIC	1 NF +80-20% 50 V F	C1	
040040044711	C730	CAP.CERAMIC	470 PF 10% 50 V SL	C1	
040070042231	C731	CAP.CERAMIC	22 NF +80-20% 50 V F	C1	
040040044711	C732	CAP.CERAMIC	470 PF 10% 50 V SL	C1	
040040041011	C733	CAP.CERAMIC	100 PF 10% 50 V SL	C1	
040032041501	C734	CAP.CERAMIC	15 PF 5% 50 V CH	C1	
040040042701	C735	CAP.CERAMIC	27 PF 10% 50 V SL	C1	
040070041031	C736	CAP.CERAMIC	10 NF +80-20% 50 V F	C1	
621004004731	C737	CAP.M.POLYESTER	0.047 UF 10% 50 V	C2	
619205062241	C738	CAP.M.POLYETHYLENE	0.22 UF 10% 63 V	C5	
040032041801	C739	CAP.CERAMIC	18 PF 5% 50 V CH	C1	
621004004731	C740	CAP.M.POLYESTER	0.047 UF 10% 50 V	C2	
042446161061	C741	CAP.ELECT.	10 UF 20% 16 V	C2	
040040042211	C742	CAP.CERAMIC	220 PF 10% 50 V SL	C1	
621003006831	C743	CAP.M.POLYESTER	0.068 UF 5% 50 V	C2	
042184502251	C744	CAP.ELECT.	2.2 UF 20% 50 V	C1	
042140164771	C747	CAP.ELECT.	470 UF 20% 16 V	C5	
040070042231	C748	CAP.CERAMIC	22 NF +80-20% 50 V F	C1	
040070042231	C749	CAP.CERAMIC	22 NF +80-20% 50 V F	C1	
040070041031	C750	CAP.CERAMIC	10 NF +80-20% 50 V F	C1	
042140161071	C751	CAP.ELECT.	100 UF 20% 16 V	C2	
040070021031	C752	CAP.CERAMIC	100 NF +80-20% 25 V F	C2	
040070042231	C753	CAP.CERAMIC	22 NF +80-20% 50 V F	C1	
042140161071	C754	CAP.ELECT.	100 UF 20% 16 V	C2	
040830002011	VC726	CAP.CER.TRIMMER	20 PF	C8	

POSITION: TXT BLOCK

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
042416501051	C755	CAP.ELECT. *	1 UF 20% 50 V	C2	
042140161071	C756	CAP.ELECT. *	100 UF 20% 16 V	C2	
040070042231	C757	CAP.CERAMIC *	22 NF +80-20% 50 V F	C1	

NOTE: * WILL BE USED FOR ONLY FLOF DIFFERENCE

RESISTORS

POSITION: TXT BLOCK

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
030020647131	R734	RES.CAR.FILM	470 R 5% 1/4 W	R1	
030020610231	R735	RES.CAR.FILM	1 K 5% 1/4 W	R1	
030020633231	R736	RES.CAR.FILM	3.3 K 5% 1/4 W	R1	
030020618231	R737	RES.CAR.FILM	1.8 K 5% 1/4 W	R1	
030020633231	R738	RES.CAR.FILM	3.3 K 5% 1/4 W	R1	
030020618231	R739	RES.CAR.FILM	1.8 K 5% 1/4 W	R1	
030020633231	R740	RES.CAR.FILM	3.3 K 5% 1/4 W	R1	
030020618231	R741	RES.CAR.FILM	1.8 K 5% 1/4 W	R1	
030020612231	R743	RES.CAR.FILM	1.2 K 5% 1/4 W	R1	
030020610331	R744	RES.CAR.FILM	10 K 5% 1/4 W	R1	

FUNCTION: TXT

030020633231	R745	RES.CAR.FILM	3.3 K 5% 1/4 W	R1
030020622131	R746	RES.CAR.FILM	220 R 5% 1/4 W	R1
030020647131	R747	RES.CAR.FILM	470 R 5% 1/4 W	R1
030020668311	R748	RES.CAR.FILM	68 K 5% 1/4 W	R1
030020668211	R749	RES.CAR.FILM	6.8 K 5% 1/4 W	R1
030020610331	R750	RES.CAR.FILM	10 K 5% 1/4 W	R1
030020622331	R751	RES.CAR.FILM	22 K 5% 1/4 W	R1
030020647231	R752	RES.CAR.FILM	4.7 K 5% 1/4 W	R1
030020622331	R753	RES.CAR.FILM	22 K 5% 1/4 W	R1
030020610331	R754	RES.CAR.FILM	10 K 5% 1/4 W	R1
030020647231	R755	RES.CAR.FILM	4.7 K 5% 1/4 W	R1
030020610131	R756	RES.CAR.FILM	100 R 5% 1/4 W	R1
030020610131	R757	RES.CAR.FILM	100 R 5% 1/4 W	R1
030020615331	R763	RES.CAR.FILM	15 K 5% 1/4 W	R1

POSITION: MAIN CHASSIS

030020647231	R765	RES.CAR.FILM	4.7 K 5% 1/4 W	R1

POSITION: TXT BLOCK

030020610131	R758	RES.CAR.FILM *	100 R 5% 1/4 W	R1
030020610131	R759	RES.CAR.FILM *	100 R 5% 1/4 W	R1
030020610331	R775	RES.CAR.FILM *	10 K 5% 1/4 W	R1

NOTE: * WILL BE USED FOR ONLY FLOF DIFFERENCE

TRANSISTORS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
		POSITION: TXT BLOCK			
046014055311	Q726	TRANSISTOR	JC 547 A	Q1	
046014055311	Q727	TRANSISTOR	JC 547 A	Q1	

FUNCTION: TXT

DIODE

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: MAIN CHASSIS				
048210411001	D727	DIODE	1N4148	D1	
048210411001	D729	DIODE	1N4148	D1	
048210411001	D730	DIODE	1N4148	D1	
048210411001	D731	DIODE	1N4148	D1	
048210411001	D732	DIODE	1N4148	D1	
048210411001	D733	DIODE	1N4148	D1	
	POSITION: TXT BLOCK				
048210411001	D728	DIODE *	1N4148	D1	

NOTE: * WILL BE USED FOR ONLY FLOF DIFFERENCE

INTEGRATED CIRCUITS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: TXT BLOCK				
045000000801	IC728	IC	SAA5345P/T	IC10	*
045076070401	IC730	IC	SAA5231	IC6	*
	POSITION: TXT BLOCK				
045000000071	IC727	IC *	PCF84C81 / CTV974	IC9	*

NOTE: * WILL BE USED FOR ONLY FLOF DIFFERENCE

COILS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: TXT BLOCK				
608180000101	L726	COIL,AXIAL FIXED	15 UH	CO2	

FUNCTION: TXT

FILTERS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: TXT BLOCK				
037720007751	EM727	RESONATOR,CERAMIC	6 MHz	FL2	

CRYSTALS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: TXT BLOCK				
049030000161	EM726	CRYSTAL	13.875MHz	CR1	*
	POSITION: TXT BLOCK				
049030000451	EM729	CRYSTAL *	9.8304MHZ	CR1	

NOTE: * WILL BE USED FOR ONLY FLOF DIFFERENCE

CONNECTORS

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: TXT BLOCK				
075030211011	WC732	CONNECTOR 2P	2P	CN1	
075030710871	EM114	CONNEC.BOARD TO B	7 PIN FEMALE	CN3	
075030611051	EM115	CONNEC.BOARD TO B	6 PIN FEMALE 4024-06-06	CN3	
075030411001	WC726	CONNECTOR 4P	4P	CN2	
	POSITION: MAIN CHASSIS				
002042000011	WC726	WIRE CONNECTOR	4 PIN WIRE CON.W 2 CNN.	CN1	
002022000001	WC731	WIRE CONNECTOR	2 PIN WIRE CON.W 2 CNN.	CN1	

FUNCTION: ASSEMBLED OR BLOCK PARTS

MAIN CHASSIS ASSY

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: —				
—	—	CHASSIS *	MAIN (SM1 20-21" STEREO)	MC1	

PREAMP. ASSY

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: —				
—	—	PREAMP. *	COMPLETE	PP1	*

KEYBOARD ASSY

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: —				
—	—	KEYBOARD *	COMPLETE	KB1	

ON-OFF BLOCK (ASSY)

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: —				
—	—	ON-OFF BLOCK *	COMPLETE	OF1	

REMOTE CONTROL

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE
	POSITION: —				
—	—	REMOTE CONTROL *	TM 26	RC1	

NOTE: * MUST BE ORDERED BY BEING WRITTEN CTV MODEL NAME

FUNCTION: ASSEMBLED OR BLOCK PARTS

TUBE

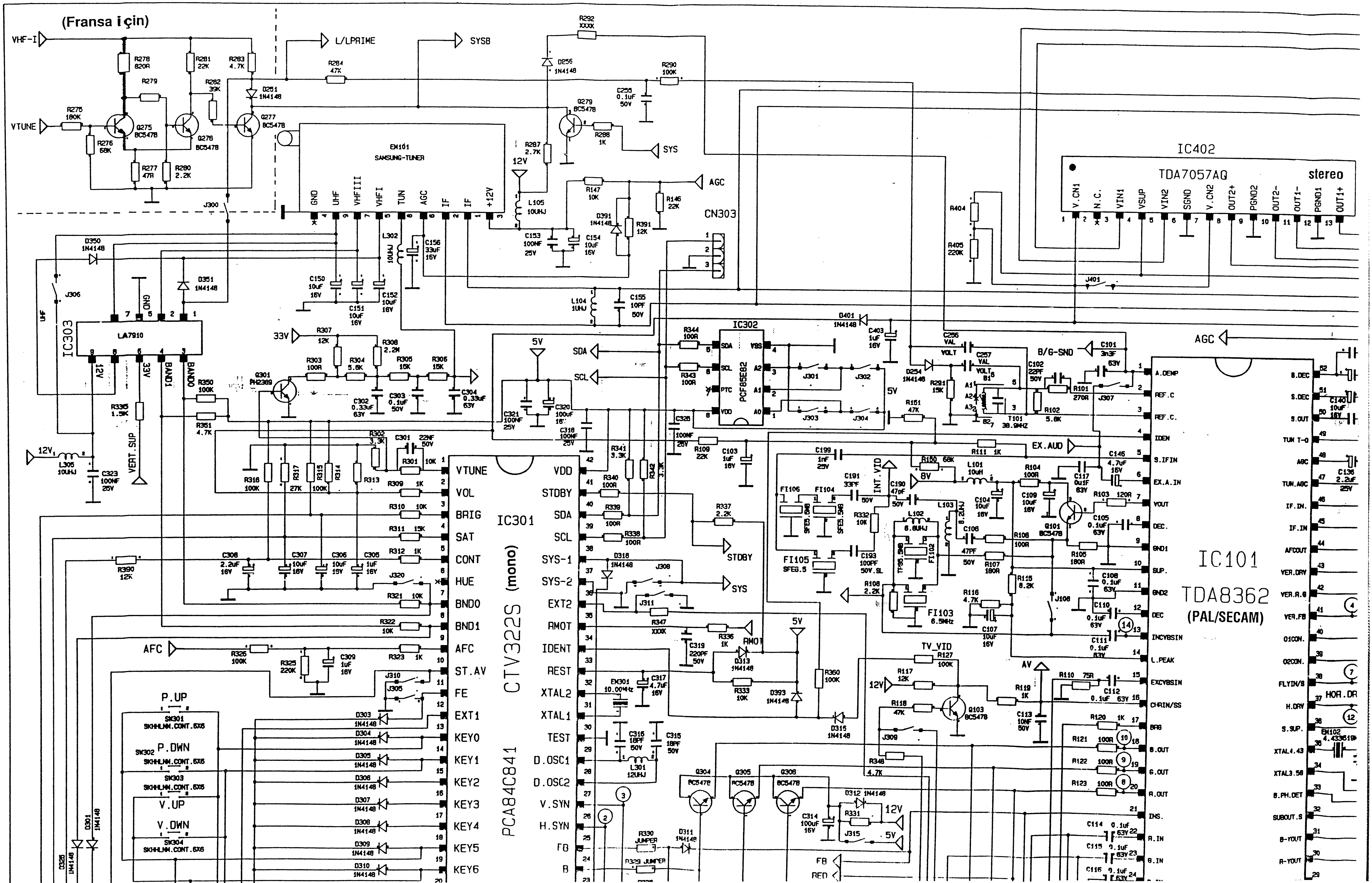
CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: —				
—	—	PICTURE TUBE *	FOR 20" CTV	TP1	
—	—	PICTURE TUBE *	FOR 21" CTV	TP2	

TXT COMPLETE

CODE	POS	COMPONENT	DESCRIPTION	UNIT PRICE ($)	SERVICE ADV. PARTS
	POSITION: —				
—	—	TXT *	COMPLETE	TXT1	

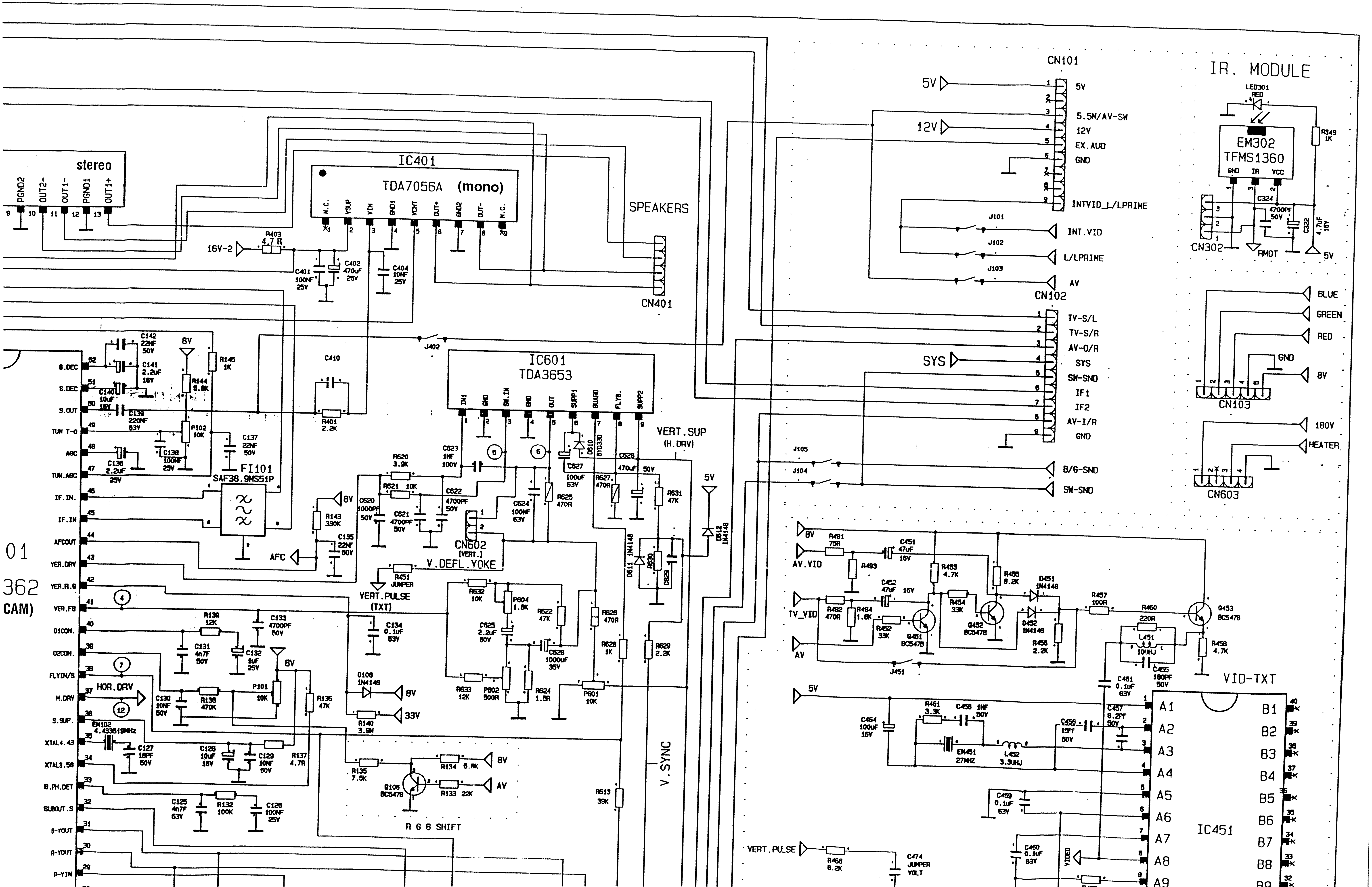
NOTE: * MUST BE ORDERED BY BEING WRITTEN CTV MODEL NAME

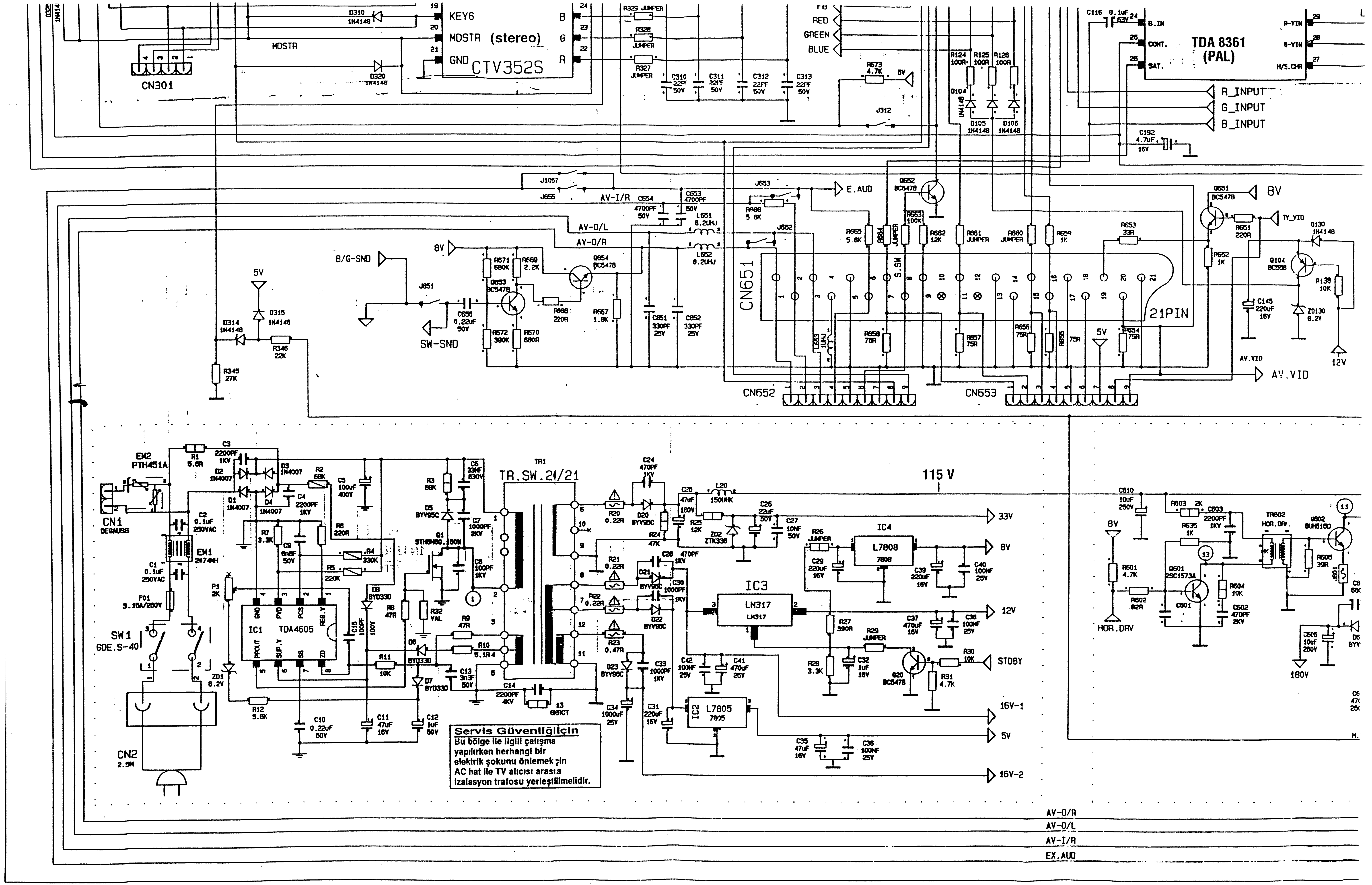
PROFİLO TELRA PT CH



(Fransa için)
VHF-I
VTUNE
L/LPRIME
SYSB
SYS
AGC
EM101
SAMSUNG-TUNER
GND
UHF
VHFIII
VHFI
TUN
AGC
IF
IF
+12V
12V
CN303
IC402
TDA7057AQ
stereo
V.CN1
N.C.
VIN1
VSUP
VIN2
SGND
V.CN2
OUT2+
PGND2
OUT2-
OUT1-
PGND1
OUT1+
IC303
LA7910
12V
33V
BAND1
BAND0
VERT.SUP
GND
UHF
33V
Q301
PH2369
SDA
SCL
5V
IC302
PCF85E82
SDA
SCL
PTC
VDD
VSS
A2
A1
A0
J301
J302
J303
J304
AGC
B/G-SND
EX.AUD
INT.VID
8V
IC301
CTV322S (mono)
PCA84C841
VTUNE
VOL
BRIG
SAT
CONT
HUE
BND0
BND1
AFC
ST.AV
FE
EXT1
KEY0
KEY1
KEY2
KEY3
KEY4
KEY5
KEY6
VDD
STDBY
SDA
SCL
SYS-1
SYS-2
EXT2
RMOT
IDENT
REST
XTAL2
XTAL1
TEST
D.OSC1
D.OSC2
V.SYN
H.SYN
FB
B
STDBY
SYS
AFC
P.UP
P.DWN
V.UP
V.DWN
SKHHLNH.CONT.6X6
12V
RMOT
5V
TV_VID
AV
12V
5V
FB
RED
IC101
TDA8362
(PAL/SECAM)
A.DEMP
REF.C
REF.C.
IDEN
S.IFIN
EX.A.IN
VOUT
DEC.
GND1
SUP.
GND2
DEC
INCVBSIN
L.PEAK
EXCVBSIN
CHRIN/SS
BRG
B.OUT
G.OUT
R.OUT
INS.
R.IN
G.IN
B.DEC
S.DEC
S.OUT
TUN T-O
AGC
TUN.AGC
IF.IN.
IF.IN
AFCOUT
VER.DRV
VER.R.G
VER.FB
O1CON.
O2CON.
FLYIN/S
H.DRV
S.SUP.
XTAL4.43
XTAL3.58
B.PH.DET
SUBOUT.S
G-YOUT
R-YOUT
HOR.DR
FI103
6.5MHz
FI105
SFE5.5
T101
38.9MHZ

PT CHASSIS CIRCUIT DIAGRAM

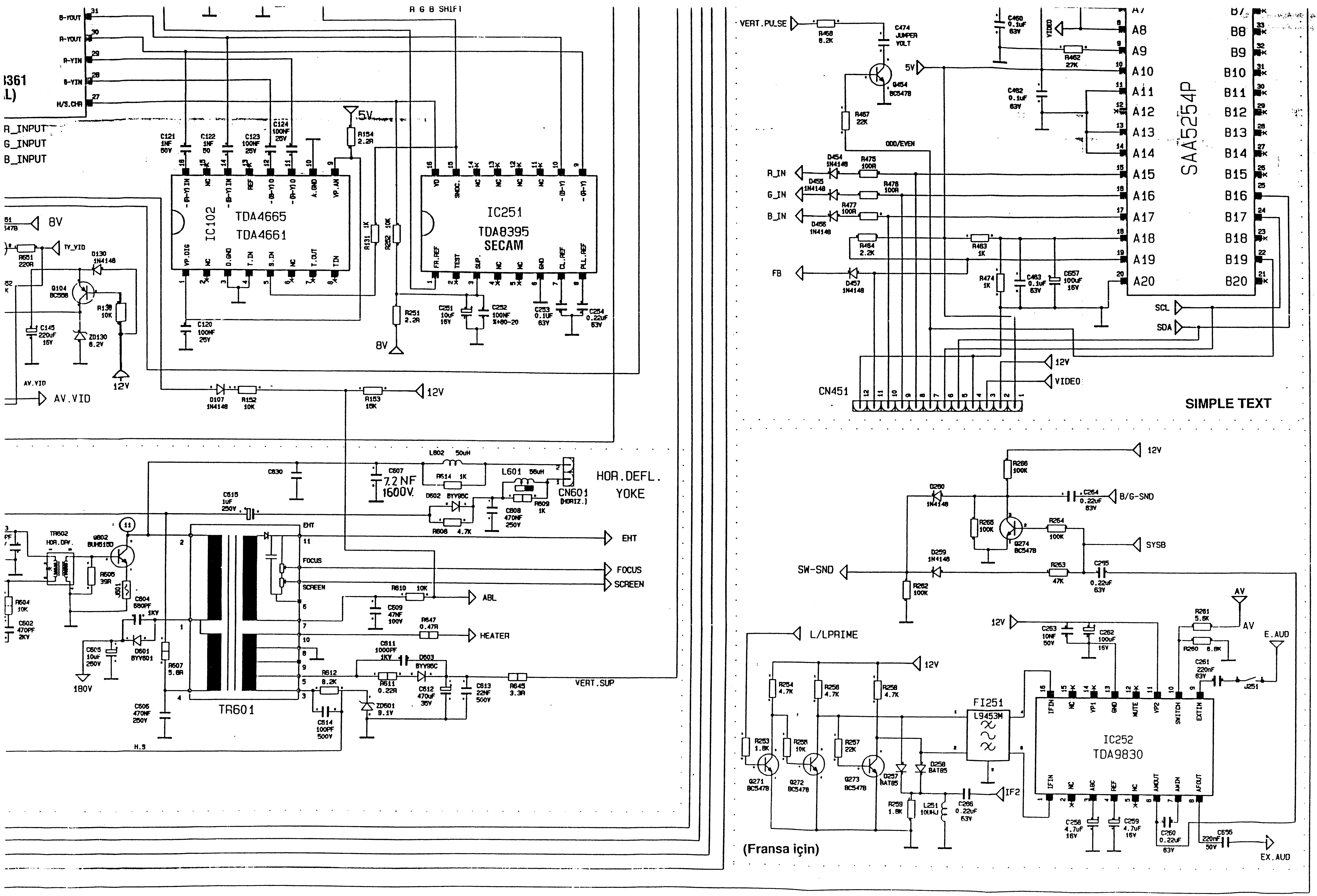

stereo
PGND2
OUT2-
OUT1-
PGND1
OUT1+
IC401
TDA7056A (mono)
N.C.
VSUP
VIN
GND1
VCNT
OUT+
GND2
OUT-
N.C.
R403 4.7 R
16V-2
C401 100NF 25V
C402 470uF 25V
C404 10NF 25V
SPEAKERS
CN401
CN101
5V
5.5M/AV-SW
12V
EX.AUD
GND
INTVID_L/LPRIME
J101
INT.VID
J102
L/LPRIME
J103
AV
CN102
TV-S/L
TV-S/R
AV-O/R
SYS
SW-SND
IF1
IF2
AV-I/R
GND
IR. MODULE
LED301 RED
R349 1K
EM302
TFMS1360
GND IR VCC
C324 4700PF 50V
C322 4.7uF 16V
CN302
RMOT
5V
BLUE
GREEN
RED
GND
8V
CN103
180V
HEATER
CN603
J402
C142 22NF 50V
C141 2.2uF 16V
C140 10uF 16V
C139 220NF 63V
C138 100NF 25V
C136 2.2uF 25V
C137 22NF 50V
8V
R145 1K
R144 5.6K
P102 10K
FI101
SAF38.9MS51P
C410
R401 2.2K
S.DEC
S.DEC
S.OUT
TUN T-O
AGC
TUN.AGC
IF.IN.
IF.IN
AFCOUT
VER.DRV
VER.R.G
VER.FB
01CON.
02CON.
FLYIN/S
H.DRV
S.SUP.
XTAL4.43
XTAL3.58
B.PH.DET
SUBOUT.S
B-YOUT
R-YOUT
R-YIN
01
362
CAM)
IC601
TDA3653
IN1
GND
SW.IN
GND
OUT
SUPP1
GUARD
FLYB.
SUPP2
VERT.SUP
(H.DRV)
C623 1NF 100V
C627 100uF 63V
D610 BYD33D
C628 470uF 50V
R627 470R
R631 47K
R620 3.9K
R621 10K
C620 1000PF 50V
C621 4700PF 50V
C622 4700PF 50V
C624 100NF 63V
R625 470R
8V
R143 330K
C135 22NF 50V
AFC
CN602
[VERT.]
V.DEFL.YOKE
R451 JUMPER
VERT.PULSE
(TXT)
5V
D612 1N4148
D611 1N4148
R630
C629
R632 10K
P604 1.8K
R622 47K
C625 2.2uF 50V
C626 1000uF 35V
R626 470R
R628 1K
R629 2.2K
R633 12K
P602 500R
R624 1.5R
P601 10K
R613 39K
V.SYNC
R139 12K
C133 4700PF 50V
C131 4n7F 50V
C132 1uF 25V
8V
HOR.DRV
C130 10NF 50V
R138 470K
P101 10K
R136 47K
C134 0.1uF 63V
D106 1N4148
8V
R140 3.9M
33V
EM102 4.433619MHz
C127 18PF 50V
C128 10uF 16V
C129 10NF 50V
R137 4.7R
R135 7.5K
Q106 BC547B
R134 6.8K
8V
R133 22K
AV
C125 4n7F 63V
R132 100K
C126 100NF 25V
R G B SHIFT
8V
AV.VID
R491 75R
R493
C451 47uF 16V
R453 4.7K
R455 8.2K
D451 1N4148
TV_VID
R492 470R
R494 1.8K
C452 47uF 16V
R452 33K
Q451 BC547B
R454 33K
Q452 BC547B
D452 1N4148
R456 2.2K
R457 100R
R460 220R
Q453 BC547B
L451 10UHJ
C455 180PF 50V
R458 4.7K
AV
J451
C461 0.1uF 63V
VID-TXT
5V
C464 100uF 16V
R461 3.3K
C458 1NF 50V
EM451 27MHZ
L452 3.3UHJ
C456 15PF 50V
C457 8.2PF 50V
C459 0.1uF 63V
C460 0.1uF 63V
VIDEO
IC451
A1
A2
A3
A4
A5
A6
A7
A8
A9
B1
B2
B3
B4
B5
B6
B7
B8
B9
VERT.PULSE
R468 8.2K
C474 JUMPER VOLT
J105
J104
B/G-SND
SW-SND


CN301
MDSTR
D310 1N4148
D320 1N4148
KEY6
MDSTR (stereo)
GND
CTV352S
B
G
R
R325 JUMPER
R326 JUMPER
R327 JUMPER
C310 22PF 50V
C311 22PF 50V
C312 22PF 50V
C313 22PF 50V
RED
GREEN
BLUE
R673 4.7K
5V
J312
R124 100R
R125 100R
R126 100R
D104 1N4148
D105 1N4148
D106 1N4148
C116 0.1uF 63V
B.IN
CONT.
SAT.
TDA 8361 (PAL)
R-YIN
B-YIN
H/S.CHR
R_INPUT
G_INPUT
B_INPUT
C192 4.7uF 16V
J1057
J655
AV-I/R
C654 4700PF 50V
C653 4700PF 50V
L651 8.2UHJ
L652 8.2UHJ
AV-O/L
AV-O/R
J653
E.AUD
R666 5.6K
J652
Q662 BC547B
R663 100K
R665 5.6K
R664 JUMPER
R662 12K
R661 JUMPER
R660 JUMPER
R659 1K
R653 33R
Q651 BC547B
8V
R651 220R
TV_VID
D130 1N4148
R652 1K
Q104 BC558
R130 10K
C145 220uF 16V
ZD130 6.2V
12V
B/G-SND
8V
R671 680K
R669 2.2K
Q654 BC547B
Q653 BC547B
J651
C655 0.22uF 50V
R668 220R
R667 1.8K
C651 330PF 25V
C652 330PF 25V
SW-SND
R672 390K
R670 680R
CN651
S.SW
21PIN
L653 10UHJ
R658 75R
R657 75R
R656 75R
R655 75R
R654 75R
5V
AV.VID
CN652
CN653
5V
D314 1N4148
D315 1N4148
R346 22K
R345 27K
EM2 PTH451A
R1 6.8R
C3 2200PF 1KV
D2 1N4007
D3 1N4007
R2 68K
C5 100uF 400V
D1 1N4007
D4 1N4007
C4 2200PF 1KV
CN1 DEGAUSS
C2 0.1uF 250VAC
EM1 2x74MH
C1 0.1uF 250VAC
F01 3.15A/250V
R7 3.3K
C9 6n8F 50V
R6 220R
R4 330K
R5 220K
P1 2K
ZD1 6.2V
IC1 TDA4605
C15 100PF
D8 BYD330
R3 68K
D5 BYV95C
C6 33NF 630V
C7 1000PF 2KV
Q1 STH6N80
C8 100PF 1KV
R8 47R
R32 VAL
R9 47R
R10 5.1R
D6 BYD330
R11 10K
D7 BYD330
C13 3n3F 50V
C14 2200PF 4KV
13 SKRCT
C10 0.22uF 50V
C11 47uF 16V
C12 1uF 50V
R12 5.6K
SW1 GDE.S-40
CN2 2.5M
TR1 TR.SW.21/21
C24 470PF 1KV
R20 0.22R
D20 BYV95C
C25 47uF 160V
L20 150UHK
115 V
R25 12K
R24 47K
ZD2 ZTK33B
C26 22uF 50V
C27 10NF 50V
33V
R21 0.22R
C28 470PF 1KV
D21 BYV95C
C30 1000PF 1KV
R22 0.22R
D22 BYV95C
R23 0.47R
D23 BYV95C
C33 1000PF 1KV
C34 1000uF 25V
C31 220uF 16V
R26 JUMPER
IC4 L7808
C29 220uF 16V
C39 220uF 16V
C40 100NF 25V
8V
IC3 LM317
R27 390R
C37 470uF 16V
C38 100NF 25V
12V
R29 JUMPER
C42 100NF 25V
C41 470uF 25V
R28 3.3K
C32 1uF 16V
Q20 BC547B
R30 10K
R31 4.7K
STDBY
IC2 L7805
C35 47uF 16V
C36 100NF 25V
16V-1
5V
16V-2
AV-O/R
AV-O/L
AV-I/R
EX.AUD
C610 10uF 250V
R603 2K
C603 2200PF 1KV
R635 1K
TR602 HOR.DRV.
Q602 BUH515D
8V
R601 4.7K
R602 82R
HOR.DRV
Q601 2SC1573A
C601
R604 10K
C602 470PF 2KV
R605 39R
C605 10uF 250V
180V

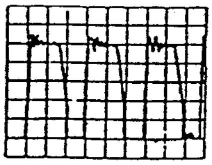
Servis Güvenliğiİçin
Bu bölge ile ilgili çalışma yapılırken herhangi bir elektrik şokunu önlemek için AC hat ile TV alıcısı arasına izalasyon trafosu yerleştirilmelidir.

OSİLOSKOP ŞEKİLLE

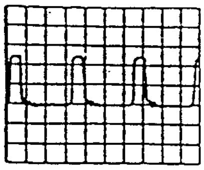
1) 5 usn/div 100 volt/div 2) 20 usn/div 2volt/div 3) 5m sn/div 2volt/div 4) 5 msn/div 0.5 volt/div 5) 5 msn/div 1 volt/div 6).5 msn/div 20 volt/div 7) 20 usn/div 2 volt/div 8) 20 usn/div 2 vol


IC102
TDA4665
TDA4661
IC251
TDA8395
SECAM
R_INPUT
G_INPUT
B_INPUT
R G B SHIFT
B-YOUT
R-YOUT
R-YIN
B-YIN
H/S.CHR
8V
5V
12V
TV_VID
AV.VID
HOR.DEFL.
YOKE
CN601
TR601
TR602
HOR.DRV.
Q602
BUH5150
EHT
FOCUS
SCREEN
ABL
HEATER
VERT.SUP
180V
H.S
VERT.PULSE
IC SAA5254P
A7
A8
A9
A10
A11
A12
A13
A14
A15
A16
A17
A18
A19
A20
B7
B8
B9
B10
B11
B12
B13
B14
B15
B16
B17
B18
B19
B20
ODD/EVEN
R_IN
G_IN
B_IN
FB
SCL
SDA
VIDEO
CN451
SIMPLE TEXT
B/G-SND
SYSB
SW-SND
AV
E.AUD
L/LPRIME
FI251
L9453M
IC252
TDA9830
IF2
EX.AUD
(Fransa için)

SİLOSKOP ŞEKİLLERİ

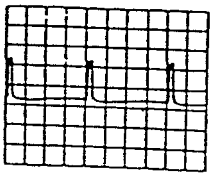


Collector of Q101



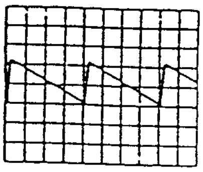
IC-476 pin 26

3) 5m sn/div 2volt/div



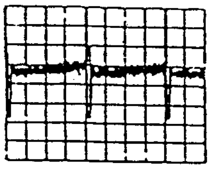
IC-476 pin 27

4) 5 msn/div 0,5 volt/div



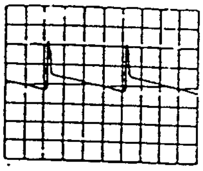
IC-181 pin 41

5) 5 msn/div 1 volt/div



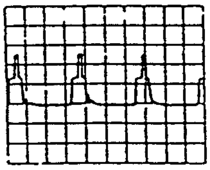
IC-577 pin 4

6) 5 msn/div 20 volt/div



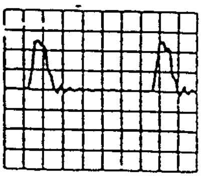
IC-577 pin 2

7) 20 usn/div 2 volt/div



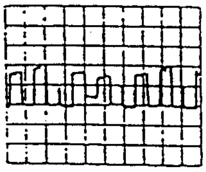
IC-181 pin 38

8) 10 usn/div 50 volt/div



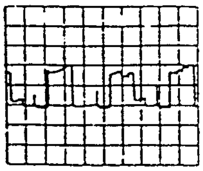
Cathode of D 584

9) 20 usn/div 2 volt/div



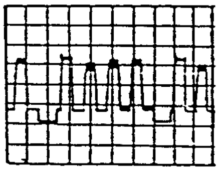
IC-181 pin 20

10) 20 usn/div 2 volt/div



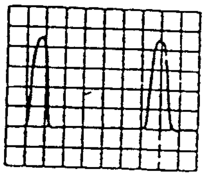
IC-181 pin 19

11) 10 usn/div 2 volt/div



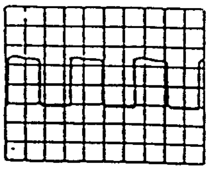
IC-181 pin 18

12) 10 usn/div 200 volt/div



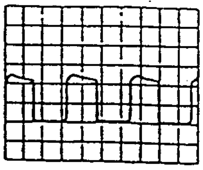
Collector of Q 580

13) 20 usn/div 0.5 volt/div



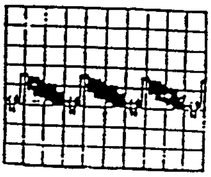
IC-181 pin 37

14) 20 usn/div 50 volt/div

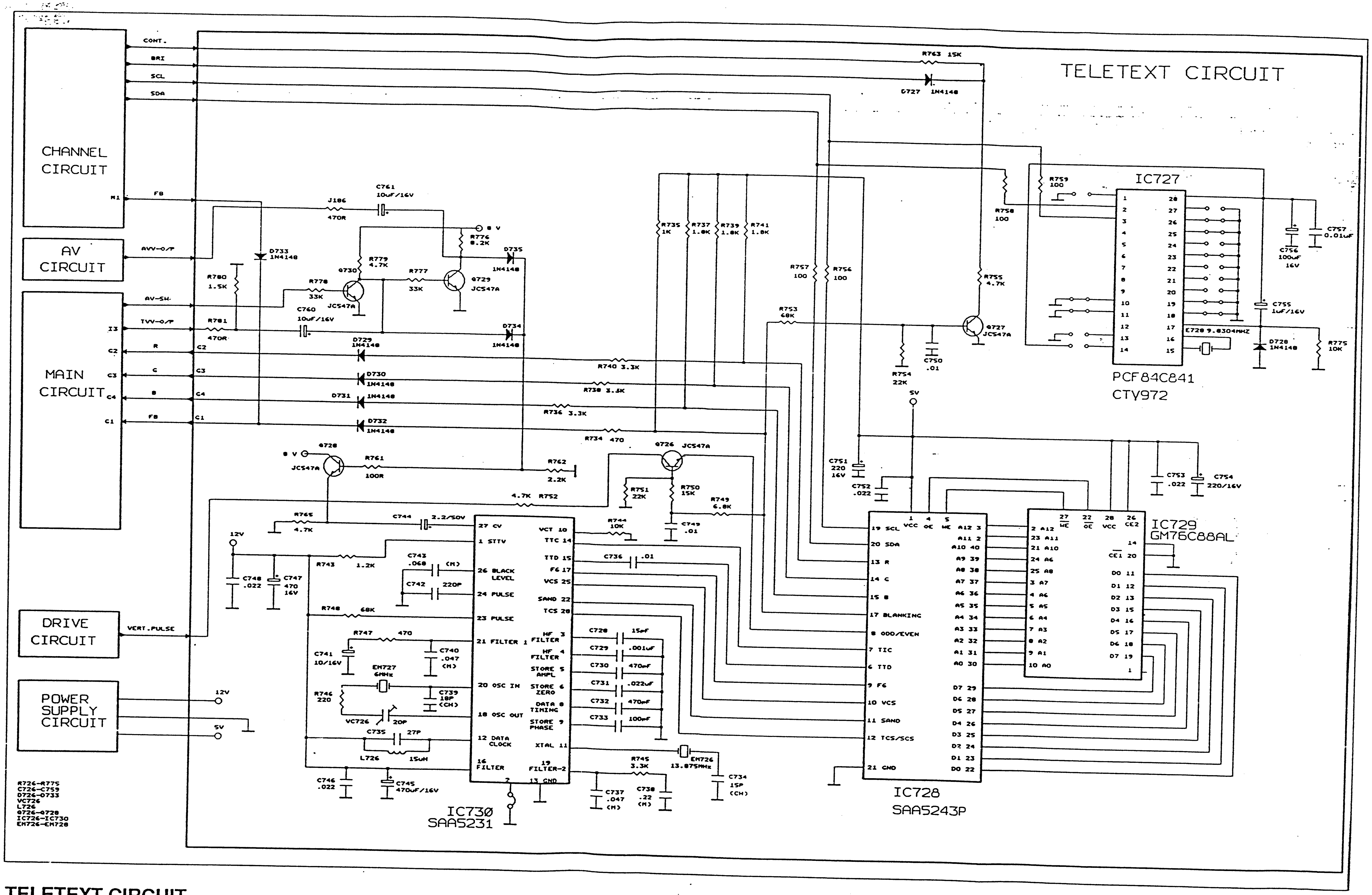


Collector of Q 581

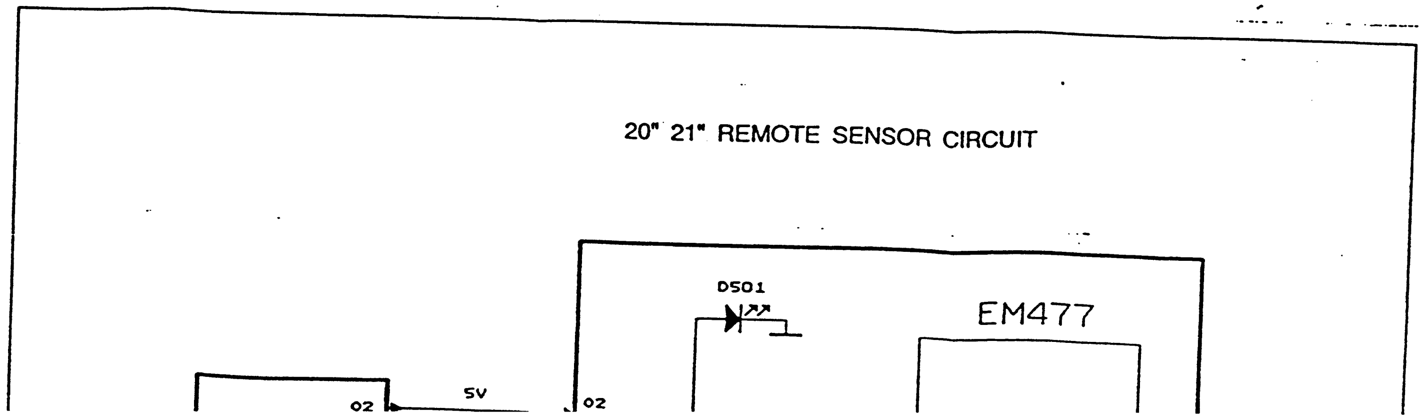
15) 20 usn/div 1 volt/div



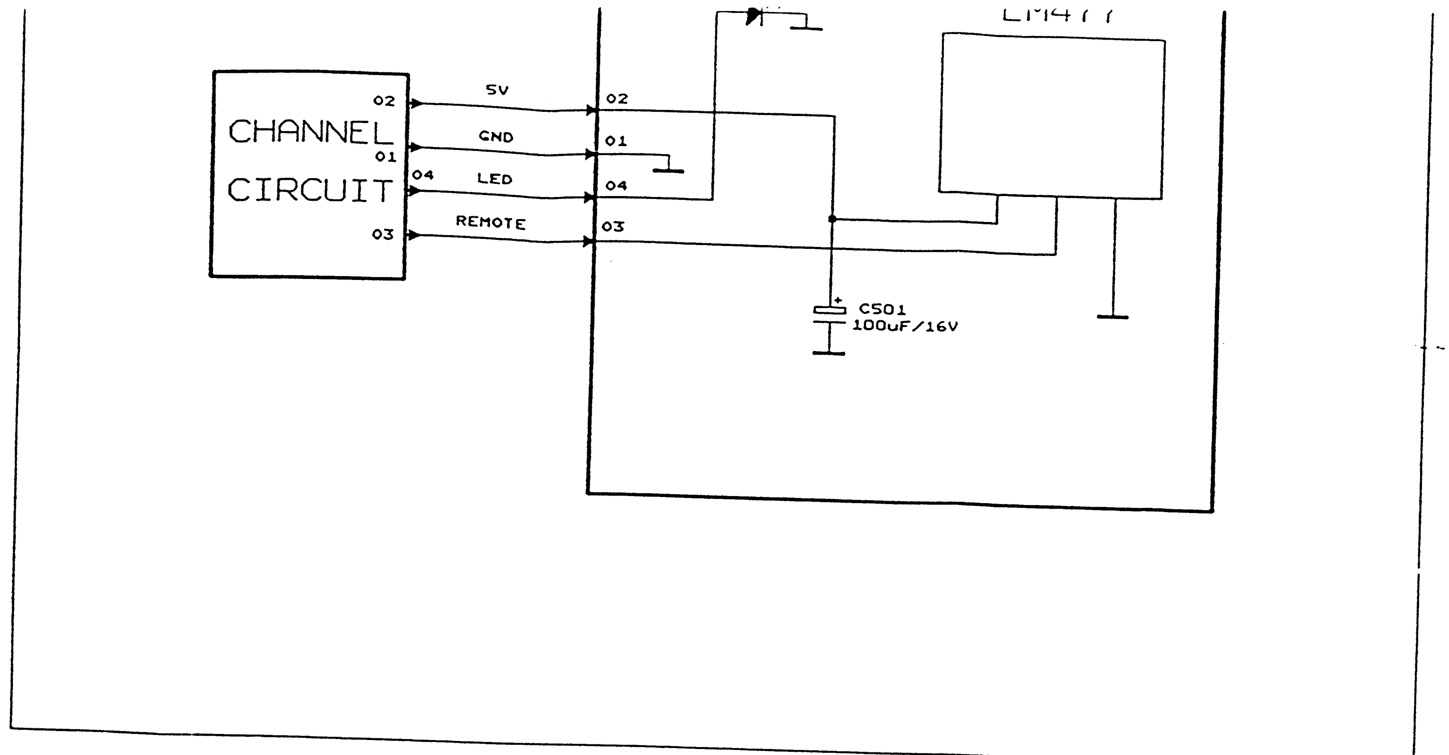
IC-181 pin 13


TELETEXT CIRCUIT
CHANNEL CIRCUIT
AV CIRCUIT
MAIN CIRCUIT
DRIVE CIRCUIT
POWER SUPPLY CIRCUIT
CONT.
BRI
SCL
SDA
FB
AVV-O/P
AV-SW.
TVV-O/P
VERT.PULSE
12V
5V
8 V
R763 15K
D727 1N4148
IC727
PCF84C841
CTY972
IC728
SAA5243P
IC729
GM76C88AL
IC730
SAA5231
Q726 JC547A
Q727 JC547A
Q728 JC547A
Q729 JC547A
Q730 JC547A
C761 10uF/16V
C760 10uF/16V
J186 470R
R776 8.2K
R779 4.7K
R777 33K
R778 33K
R780 1.5K
R781 470R
D733 1N4148
D735 1N4148
D734 1N4148
D729 1N4148
D730 1N4148
D731 1N4148
D732 1N4148
R740 3.3K
R738 3.3K
R736 3.3K
R734 470
R735 1K
R737 1.8K
R739 1.8K
R741 1.8K
R757 100
R756 100
R755 4.7K
R753 68K
R754 22K
C750 .01
R758 100
R759 100
C756 100uF 16V
C757 0.01uF
C755 1uF/16V
E728 9.8304MHZ
D728 1N4148
R775 10K
C751 220 16V
C752 .022
C753 .022
C754 220/16V
R761 100R
R762 2.2K
R752 4.7K
R751 22K
R750 15K
R749 6.8K
R744 10K
C749 .01
R765 4.7K
C744 2.2/50V
R743 1.2K
C748 .022
C747 470 16V
C743 .068 (M)
C742 220P
R748 68K
R747 470
C741 10/16V
C740 .047 (M)
EM727 6MHz
C739 18P (CH)
R746 220
VC726 20P
C735 27P
L726 15uH
C746 .022
C745 470uF/16V
C736 .01
C728 15pF
C729 .001uF
C730 470pF
C731 .022uF
C732 470pF
C733 100pF
R745 3.3K
EM726 13.875MHz
C734 15P (CH)
C737 .047 (M)
C738 .22 (M)
R726-R775
C726-C759
D726-D733
VC726
L726
Q726-Q728
IC726-IC730
EM726-EM728

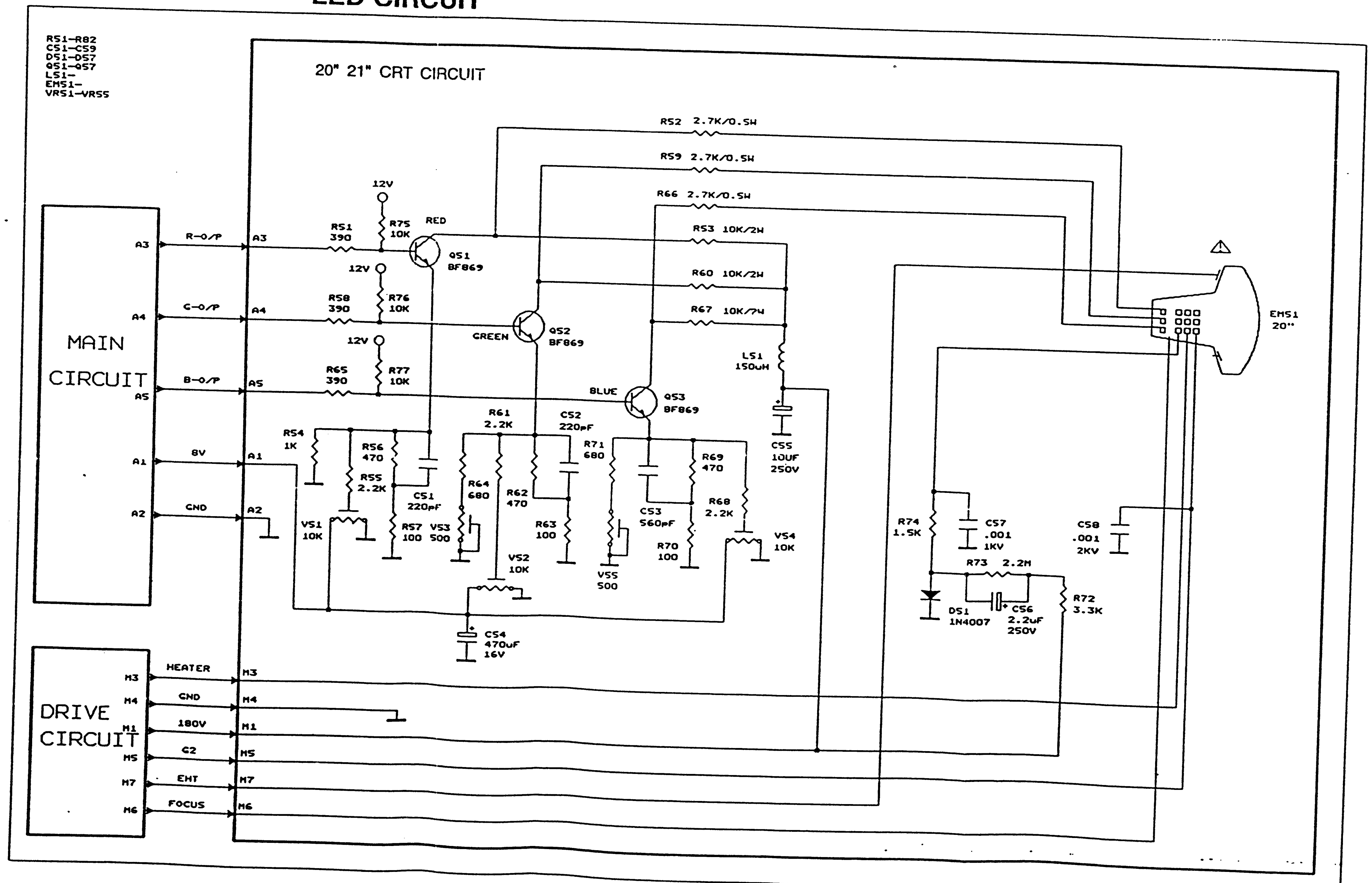
TELETEXT CIRCUIT


D501
EM477
02
5V
02

20" 21" REMOTE SENSOR CIRCUIT


CHANNEL CIRCUIT
02
01
04
03
5V
GND
LED
REMOTE
02
01
04
03
C501
100uF/16V

LED CIRCUIT

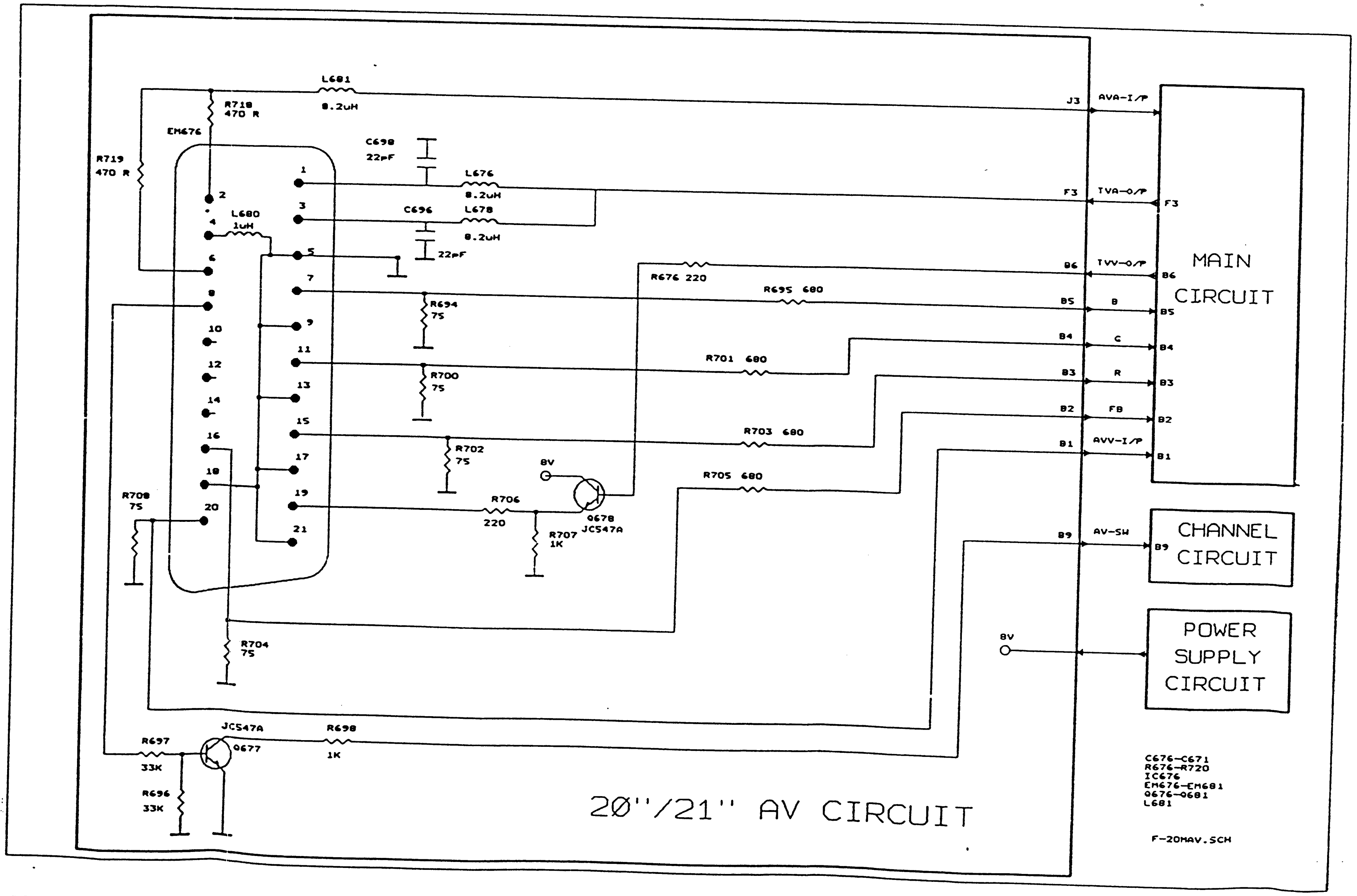

R51–R82
C51–C59
D51–D57
Q51–Q57
L51–
EM51–
VR51–VR55
20" 21" CRT CIRCUIT
MAIN CIRCUIT
A3
A4
A5
A1
A2
R–O/P
G–O/P
B–O/P
8V
GND
A3
A4
A5
A1
A2
12V
12V
12V
R51 390
R75 10K
RED
Q51 BF869
R58 390
R76 10K
GREEN
Q52 BF869
R65 390
R77 10K
BLUE
Q53 BF869
R52 2.7K/0.5W
R59 2.7K/0.5W
R66 2.7K/0.5W
R53 10K/2W
R60 10K/2W
R67 10K/7W
L51 150uH
C55 10UF 250V
R54 1K
R56 470
R55 2.2K
C51 220pF
VS1 10K
R57 100
VS3 500
R61 2.2K
R64 680
R62 470
VS2 10K
C52 220pF
R71 680
R63 100
C54 470uF 16V
VS5 500
C53 560pF
R69 470
R68 2.2K
R70 100
VS4 10K
EM51 20"
R74 1.5K
C57 .001 1KV
R73 2.2M
D51 1N4007
C56 2.2uF 250V
C58 .001 2KV
R72 3.3K
DRIVE CIRCUIT
M3
M4
M1
M5
M7
M6
HEATER
GND
180V
G2
EHT
FOCUS
M3
M4
M1
M5
M7
M6

CRT CIRCUIT

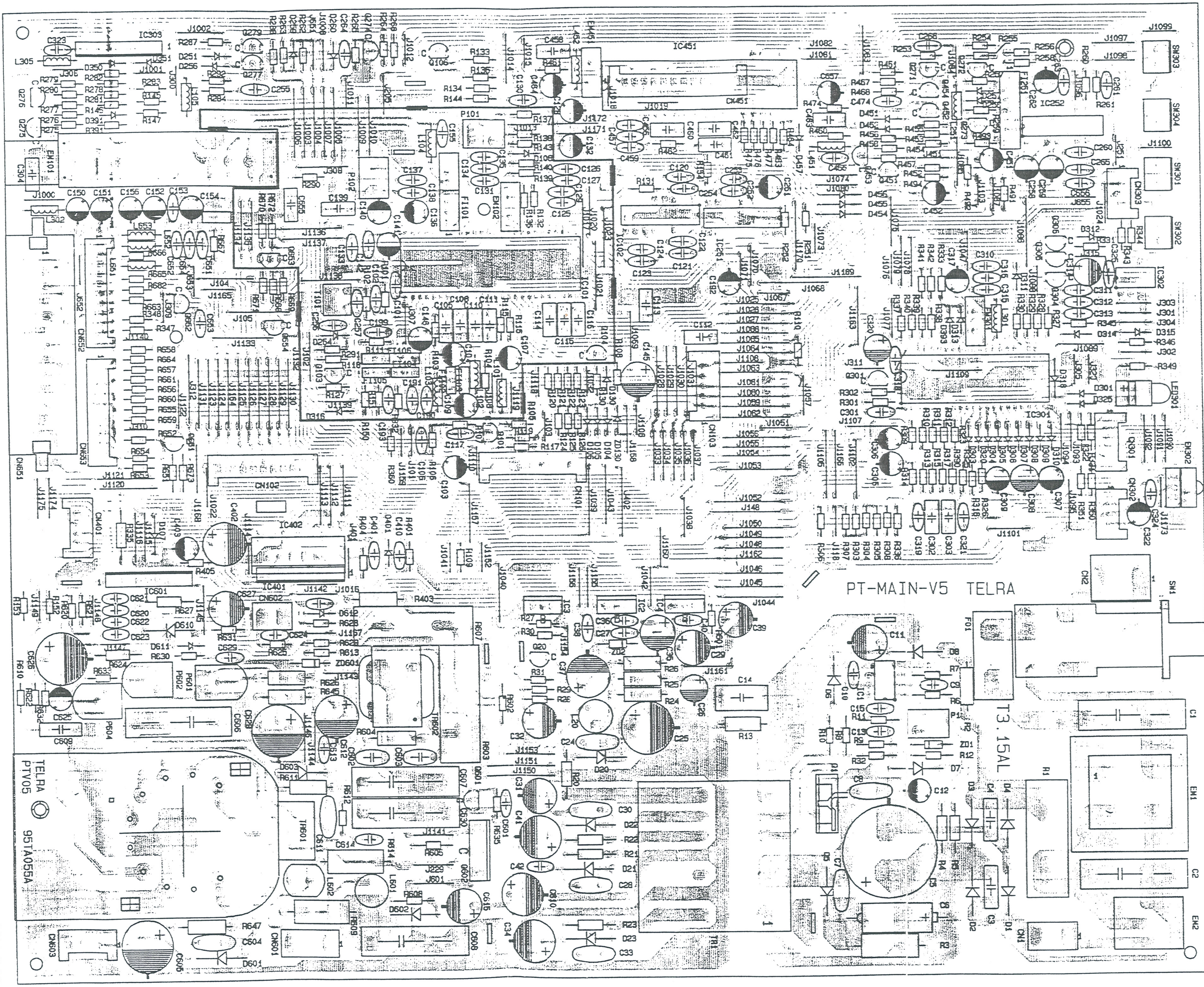
OSSILOSCOPE SHAPES

TUBE	C 595	R 610	TUBE SOCKET	LOSS COIL
14" EKRANAS	6.8 nF	0.22R (0.5W)	NARROW NECK	--------
20" EKRANAS	7.8 nF	0.47R (1W)	NARROW NECK	56 uH
20" SAMSUNG	9.1 nF	0.47R (1W)	NARROW NECK	56 uH
21"EKRANAS	8.2 nF	0.47R (1W)	NARROW NECK	150 uH
21"VIDEOCOLOR	7.8 nF	0.22R (0.5W)	NARROW NECK	150 uH

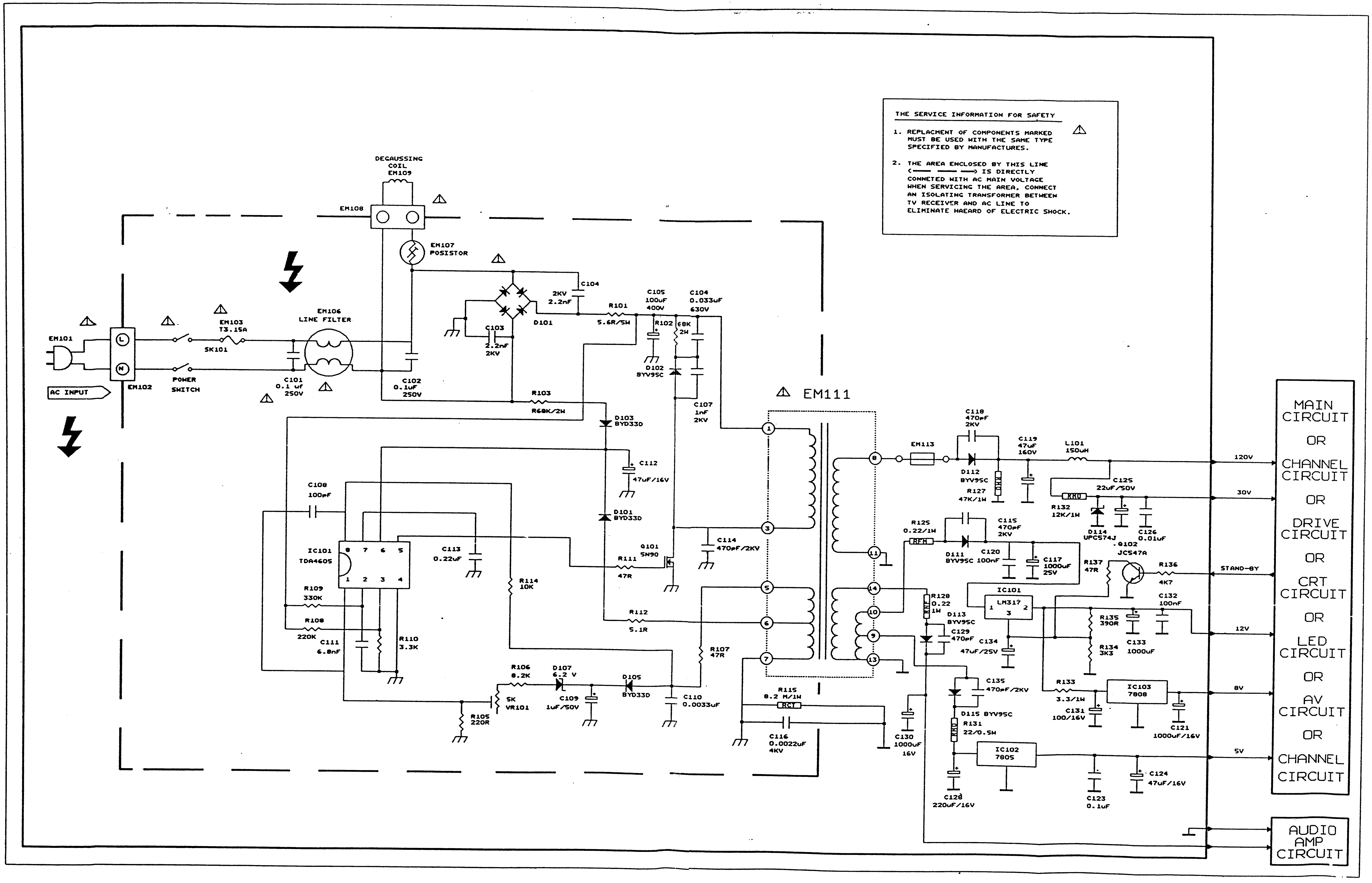
065 031 000 510


L681
8.2uH
R718
470 R
EM676
R719
470 R
C698
22pF
L676
8.2uH
C696
L678
8.2uH
22pF
L680
1uH
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
R694
75
R700
75
R702
75
8V
R706
220
R707
1K
Q678
JC547A
R708
75
R704
75
R676 220
R695 680
R701 680
R703 680
R705 680
R697
33K
R696
33K
JC547A
Q677
R698
1K
J3
AVA-I/P
F3
TVA-O/P
F3
B6
TVV-O/P
B6
B5
B
B5
B4
C
B4
B3
R
B3
B2
FB
B2
B1
AVV-I/P
B1
MAIN
CIRCUIT
B9
AV-SW
B9
CHANNEL
CIRCUIT
8V
POWER
SUPPLY
CIRCUIT
20"/21" AV CIRCUIT
C676-C671
R676-R720
IC676
EM676-EM681
Q676-Q681
L681
F-20MAV.SCH

AV CIRCUIT


PT-MAIN-V5 TELRA
T3.15AL
TELRA
PTV05
95TA055A
IC303
IC451
IC252
IC302
IC301
IC401
IC402
IC601
IC1
IC2
IC3
CN102
CN103
CN101
CN401
CN651
CN652
CN653
CN301
CN302
CN303
CN502
CN601
CN603
CN1
CN2
SW1
SW301
SW302
SW303
SW304
EM1
EM2
EM101
EM102
EM301
EM302
EM451
LED301
F01
TR1
TR601
TR602
L305
L302
L653
L661
L601
L602
C1
C2
R1

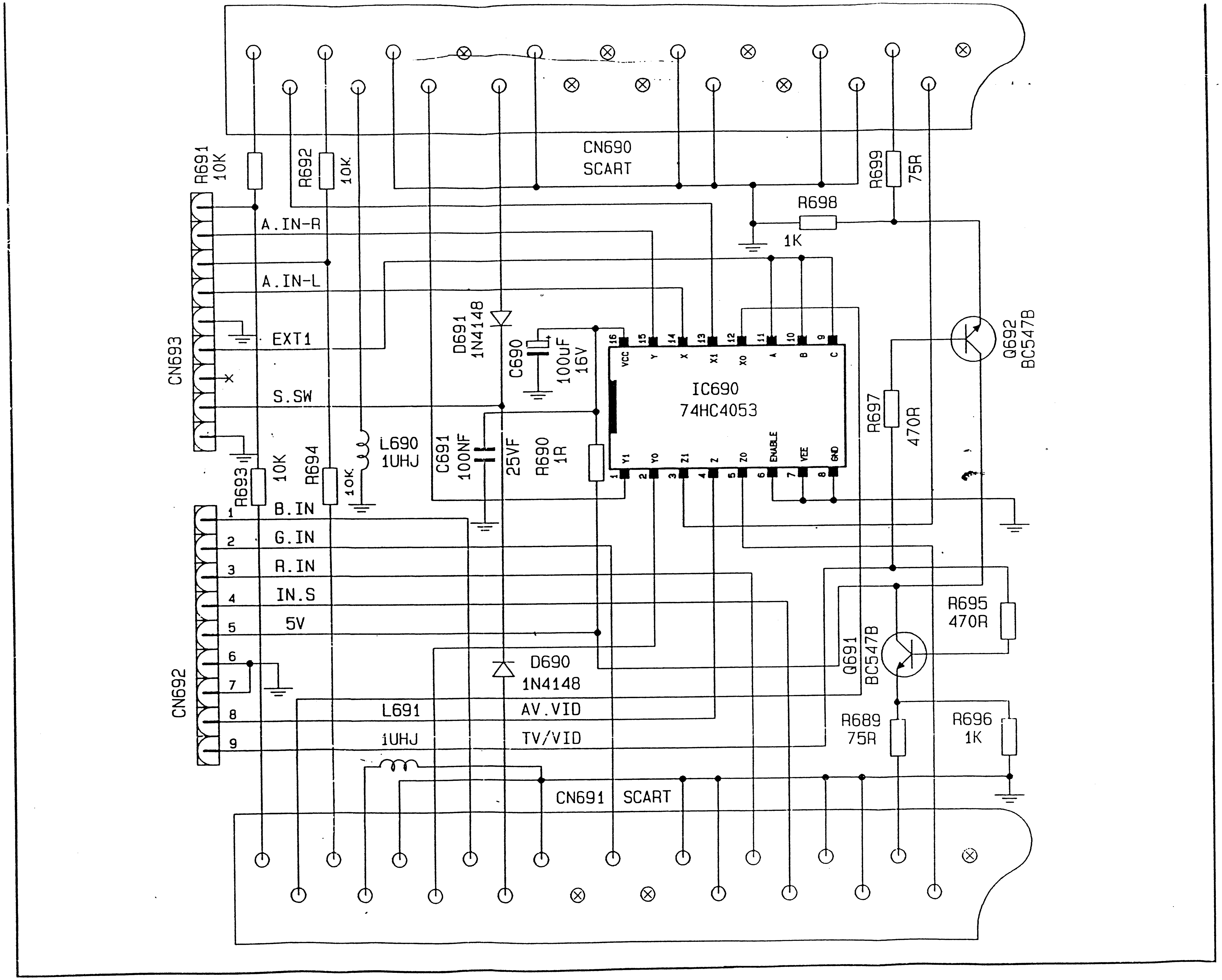
ANA PCB


DEGAUSSING COIL EM109
EM108
EM107 POSISTOR
EM101
EM102
AC INPUT
POWER SWITCH
SK101
EM103 T3.15A
EM106 LINE FILTER
C101 0.1 uf 250V
C102 0.1uF 250V
C103 2.2nF 2KV
D101
2KV 2.2nF
C104
R101 5.6R/5W
C105 100uF 400V
C104 0.033uF 630V
R102
68K 2W
D102 BYV95C
C107 1nF 2KV
R103 R68K/2W
D103 BYD33D
C112 47uF/16V
D101 BYD33D
C108 100pF
IC101 TDA4605
8 7 6 5
1 2 3 4
C113 0.22uF
R109 330K
R108 220K
C111 6.8nF
R110 3.3K
R114 10K
Q101 SN90
R111 47R
C114 470pF/2KV
R112 5.1R
R107 47R
R106 8.2K
D107 6.2 V
C109 1uF/50V
D105 BYD33D
C110 0.0033uF
5K VR101
R105 220R
R115 8.2 M/1W
RCT
C116 0.0022uF 4KV
EM111
1 3 5 6 7
8 11 14 10 9 13
EM113
C118 470pF 2KV
D112 BYV95C
R127 47K/1W
RHO
C119 47uF 160V
L101 150uH
C125 22uF/50V
R132 12K/1W
D114 UPC574J
C126 0.01uF
R125 0.22/1W
RFM
C115 470pF 2KV
D111 BYV95C
C120 100nF
C117 1000uF 25V
Q102 JC547A
R137 47R
R136 4K7
IC101 LM317
1 2 3
C132 100nF
R135 390R
R134 3K3
C133 1000uF
R128 0.22 1W
RNF
D113 BYV95C
C129 470pF
C134 47uF/25V
C130 1000uF 16V
C135 470pF/2KV
D115 BYV95C
R131 22/0.5W
R133 3.3/1W
C131 100/16V
IC103 7808
C121 1000uF/16V
IC102 7805
C128 220uF/16V
C123 0.1uF
C124 47uF/16V
120V
30V
STAND-BY
12V
8V
5V
MAIN CIRCUIT OR CHANNEL CIRCUIT OR DRIVE CIRCUIT OR CRT CIRCUIT OR LED CIRCUIT OR AV CIRCUIT OR CHANNEL CIRCUIT
AUDIO AMP CIRCUIT

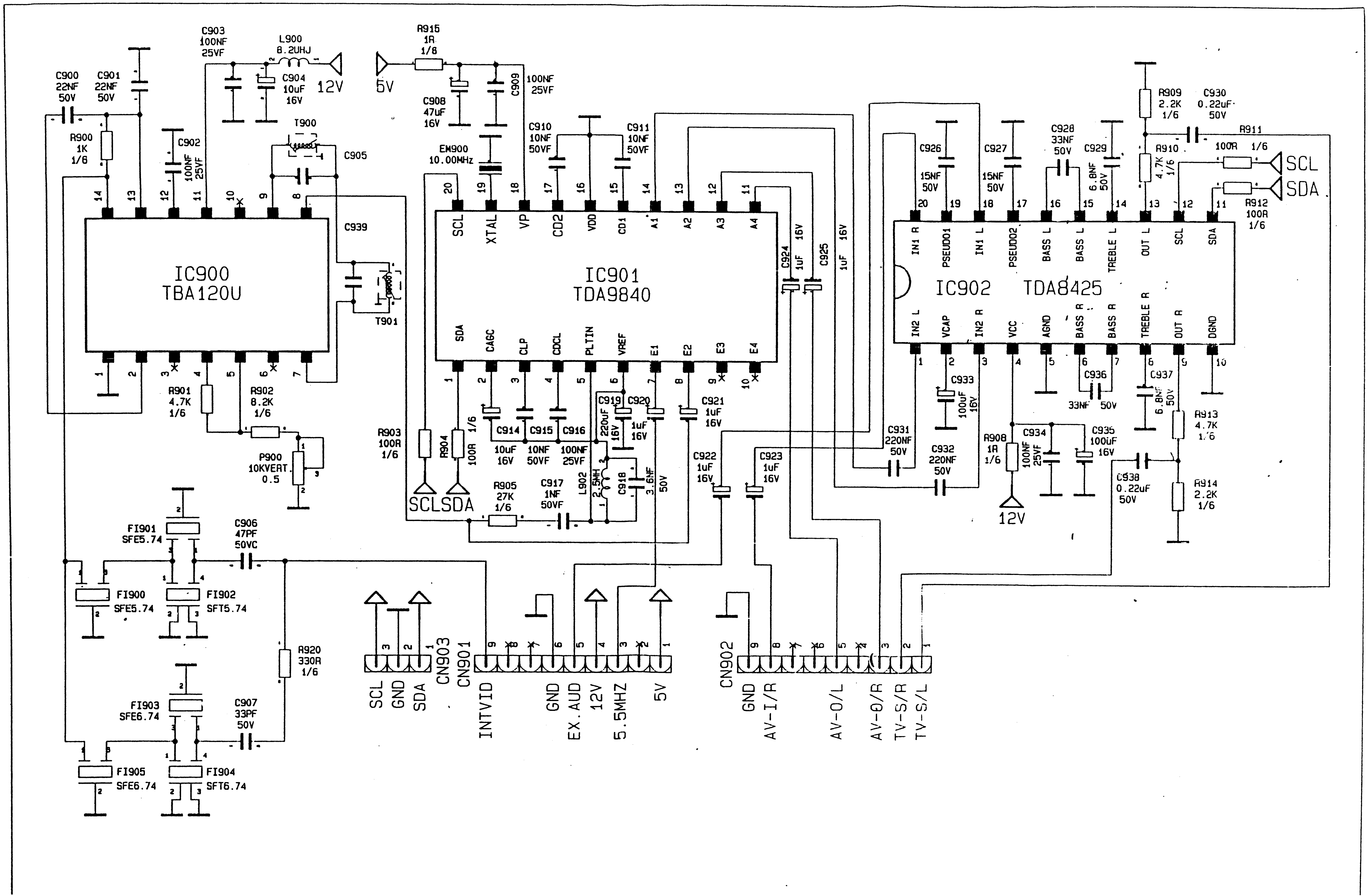
THE SERVICE INFORMATION FOR SAFETY

1. REPLACMENT OF COMPONENTS MARKED ⚠ MUST BE USED WITH THE SAME TYPE SPECIFIED BY MANUFACTURES.
2. THE AREA ENCLOSED BY THIS LINE (—— —— ——) IS DIRECTLY CONNETED WITH AC MAIN VOLTAGE WHEN SERVICING THE AREA, CONNECT AN ISOLATING TRANSFORMER BETWEEN TV RECEIVER AND AC LINE TO ELIMINATE HAEARD OF ELECTRIC SHOCK.

POWER CIRCUIT

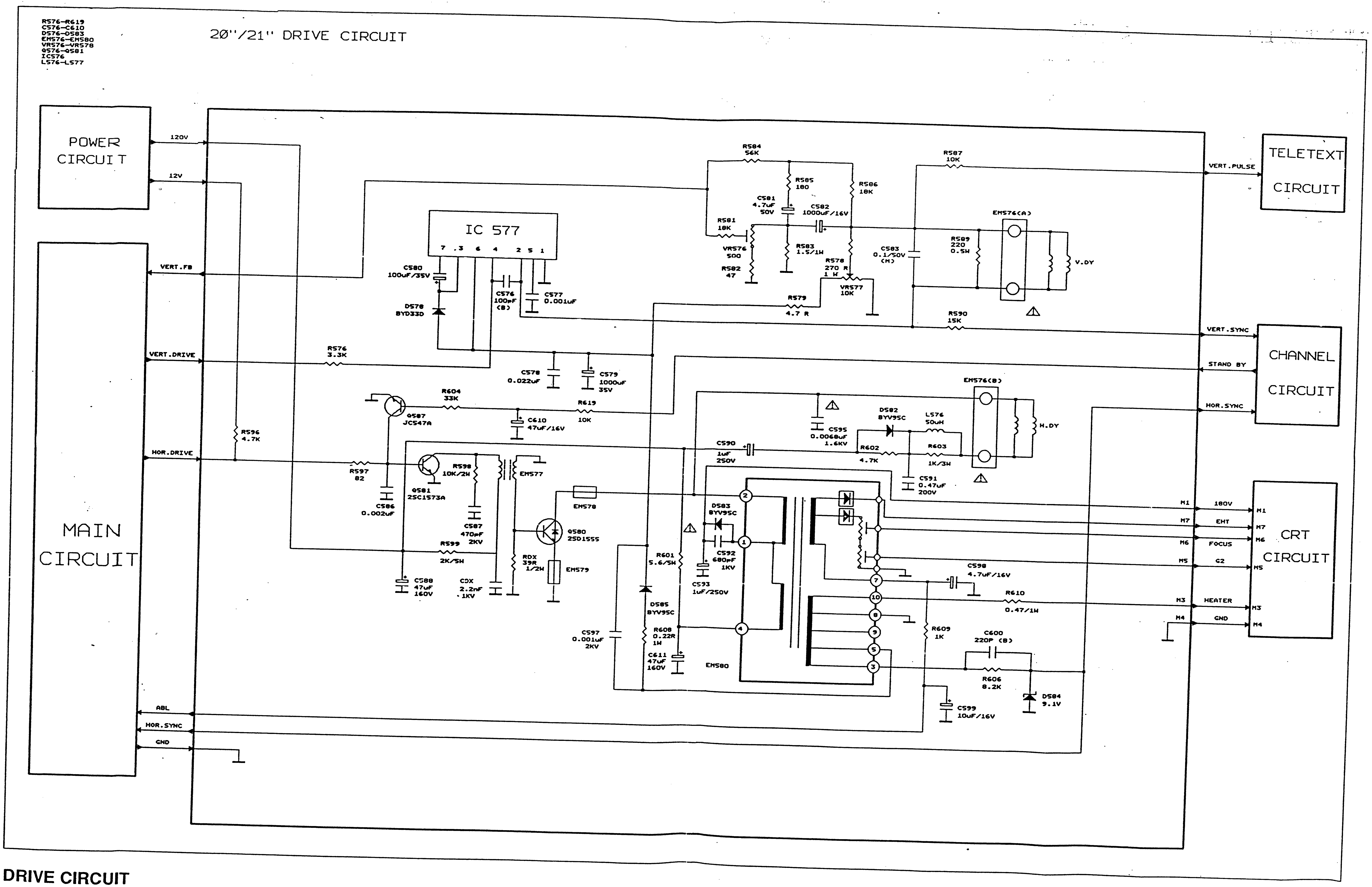

CN690
SCART
R691
10K
R692
10K
R699
75R
R698
1K
A.IN-R
A.IN-L
EXT1
S.SW
CN693
D691
1N4148
C690
100uF
16V
IC690
74HC4053
16
15
14
13
12
11
10
9
VCC
Y
X
X1
X0
A
B
C
Y1
Y0
Z1
Z
Z0
ENABLE
VEE
GND
1
2
3
4
5
6
7
8
Q692
BC547B
R697
470R
L690
1UHJ
C691
100NF
25VF
R690
1R
R693
10K
R694
10K
B.IN
G.IN
R.IN
IN.S
5V
1
2
3
4
5
6
7
8
9
CN692
D690
1N4148
L691
1UHJ
AV.VID
TV/VID
R695
470R
Q691
BC547B
R689
75R
R696
1K
CN691
SCART

ÇİFT SKART BOARD'U DEVRE ŞEMASI

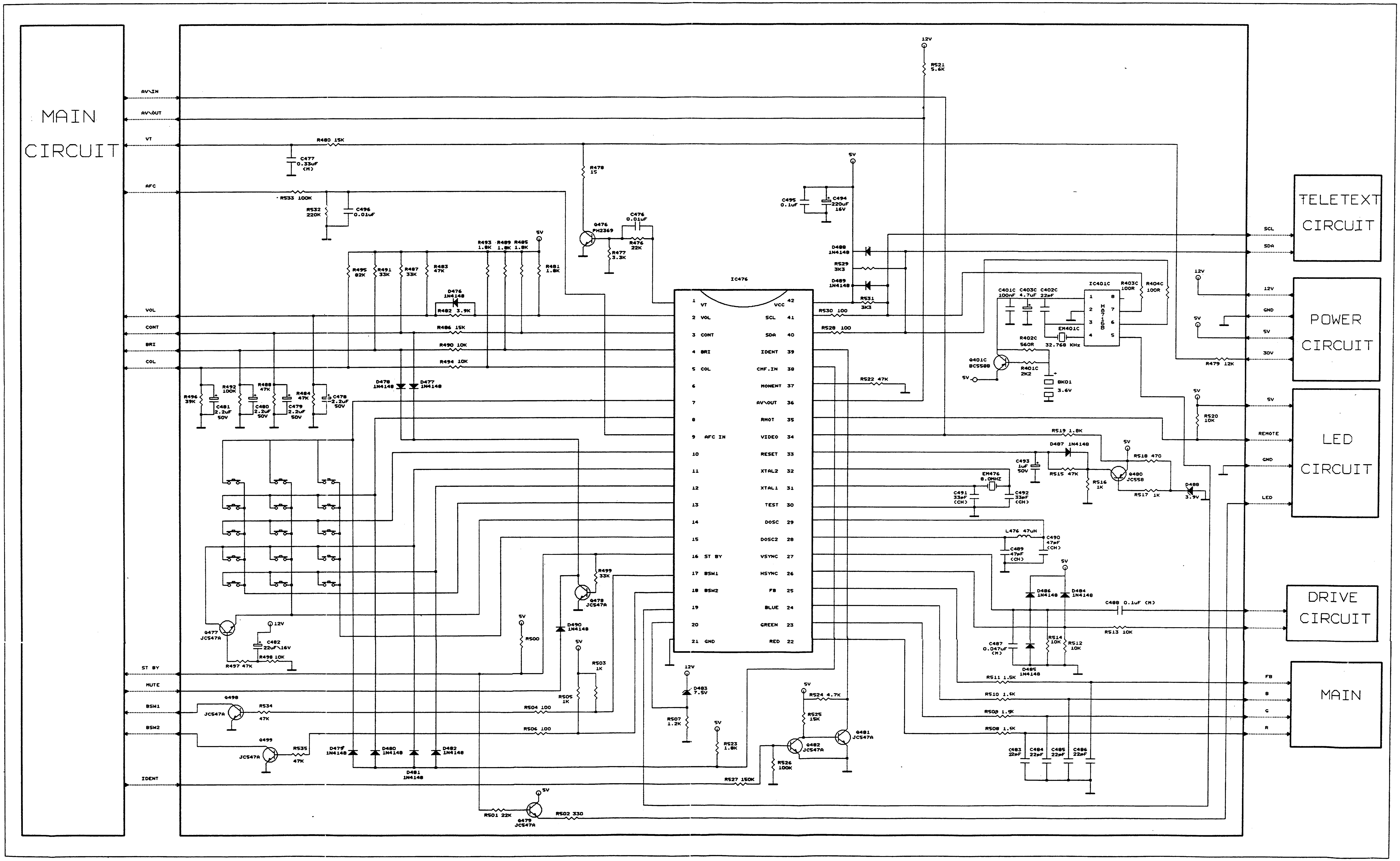


IC900
TBA120U
IC901
TDA9840
IC902
TDA8425
C900 22NF 50V
C901 22NF 50V
R900 1K 1/6
C902 100NF 25VF
C903 100NF 25VF
L900 8.2UHJ
C904 10uF 16V
12V
T900
C905
C939
T901
R901 4.7K 1/6
R902 8.2K 1/6
P900 10KVERT 0.5
R915 1R 1/6
5V
C908 47uF 16V
C909 100NF 25VF
EM900 10.00MHz
C910 10NF 50VF
C911 10NF 50VF
SCL
XTAL
VP
CD2
VDD
CD1
A1
A2
A3
A4
SDA
CAGC
CLP
CDCL
PLTIN
VREF
E1
E2
E3
E4
R903 100R 1/6
R904 100R 1/6
SCLSDA
C914 10uF 16V
C915 10NF 50VF
C916 100NF 25VF
C919 220uF 16V
C920 1uF 16V
C921 1uF 16V
R905 27K 1/6
C917 1NF 50VF
L902 2.5MH
C918 3.6NF 50V
C922 1uF 16V
C923 1uF 16V
C924 1uF 16V
C925 1uF 16V
C926 15NF 50V
C927 15NF 50V
C928 33NF 50V
C929 6.8NF 50V
R909 2.2K 1/6
C930 0.22uF 50V
R911
R910 4.7K 1/6
100R 1/6
R912 100R 1/6
IN1 R
PSEUDO1
IN1 L
PSEUDO2
BASS L
BASS L
TREBLE L
OUT L
SCL
SDA
IN2 L
VCAP
IN2 R
VCC
AGND
BASS R
BASS R
TREBLE R
OUT R
DGND
C933 100uF 16V
C931 220NF 50V
C932 220NF 50V
R908 1R 1/6
C934 100NF 25VF
C935 100uF 16V
C936 33NF 50V
C937 6.8NF 50V
C938 0.22uF 50V
R913 4.7K 1/6
R914 2.2K 1/6
FI900 SFE5.74
FI901 SFE5.74
FI902 SFT5.74
FI903 SFE6.74
FI904 SFT6.74
FI905 SFE6.74
C906 47PF 50VC
C907 33PF 50V
R920 330R 1/6
CN903
SCL
GND
SDA
CN901
INTVID
GND
EX.AUD
12V
5.5MHZ
5V
CN902
GND
AV-I/R
AV-O/L
AV-O/R
TV-S/R
TV-S/L

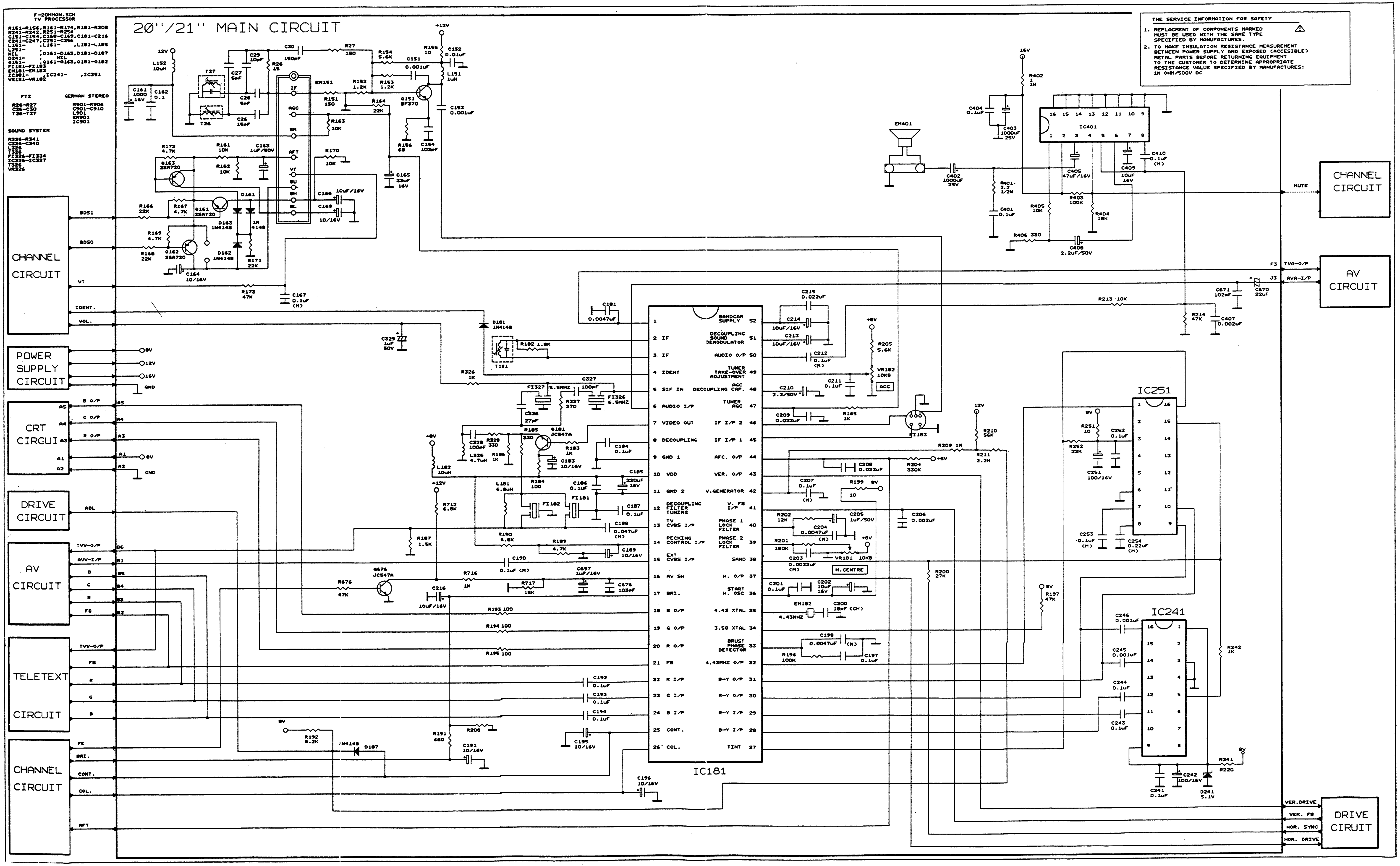
CHANNEL CIRCUIT


R576—R619
C576—C610
D576—D583
EM576—EM580
VR576—VR578
Q576—Q581
IC576
L576—L577
20"/21" DRIVE CIRCUIT
POWER CIRCUIT
120V
12V
MAIN CIRCUIT
VERT.FB
VERT.DRIVE
HOR.DRIVE
ABL
HOR.SYNC
GND
IC 577
7 .3 6 4 2 5 1
C580 100uF/35V
D578 BYD33D
C576 100pF (B)
C577 0.001uF
R576 3.3K
C578 0.022uF
C579 1000uF 35V
R604 33K
Q587 JC547A
C610 47uF/16V
R619 10K
R596 4.7K
R597 82
Q581 2SC1573A
C586 0.002uF
R598 10K/2W
C587 470pF 2KV
EM577
R599 2K/5W
C588 47uF 160V
CDX 2.2nF 1KV
EM578
Q580 2SD1555
RDX 39R 1/2W
EM579
R584 56K
R585 180
R586 18K
C581 4.7uF 50V
C582 1000uF/16V
R581 18K
VR576 500
R582 47
R583 1.5/1W
R578 270 R 1 W
VR577 10K
R579 4.7 R
R587 10K
C583 0.1/50V (M)
R589 220 0.5W
EM576(A)
V.DY
R590 15K
EM576(B)
H.DY
C595 0.0068uF 1.6KV
D582 BYV95C
L576 50uH
R602 4.7K
R603 1K/3W
C591 0.47uF 200V
C590 1uF 250V
D583 BYV95C
C592 680pF 1KV
C593 1uF/250V
R601 5.6/5W
D585 BYV95C
R608 0.22R 1W
C611 47uF 160V
C597 0.001uF 2KV
EM580
2
1
4
7
10
8
9
5
3
C598 4.7uF/16V
R610 0.47/1W
R609 1K
C600 220P (B)
R606 8.2K
D584 9.1V
C599 10uF/16V
TELETEXT CIRCUIT
VERT.PULSE
CHANNEL CIRCUIT
VERT.SYNC
STAND BY
HOR.SYNC
CRT CIRCUIT
M1 180V M1
M7 EHT M7
M6 FOCUS M6
M5 G2 M5
M3 HEATER M3
M4 GND M4

DRIVE CIRCUIT


MAIN CIRCUIT
AV\IN
AV\OUT
VT
AFC
VOL
CONT
BRI
COL
ST BY
MUTE
BSW1
BSW2
IDENT
TELETEXT CIRCUIT
SCL
SDA
POWER CIRCUIT
12V
GND
5V
30V
LED CIRCUIT
5V
REMOTE
GND
LED
DRIVE CIRCUIT
MAIN
FB
B
G
R
IC476
1 VT
2 VOL
3 CONT
4 BRI
5 COL
6
7
8
9 AFC IN
10
11
12
13
14
15
16 ST BY
17 BSW1
18 BSW2
19
20
21 GND
42 VCC
41 SCL
40 SDA
39 IDENT
38 CMF.IN
37 MOMENT
36 AV\OUT
35 RMOT
34 VIDEO
33 RESET
32 XTAL2
31 XTAL1
30 TEST
29 DOSC
28 DOSC2
27 VSYNC
26 HSYNC
25 FB
24 BLUE
23 GREEN
22 RED
R480 15K
C477 0.33uF (M)
R533 100K
R532 220K
C496 0.01uF
R478 15
Q476 PH2369
C476 0.01uF
R477 3.3K
R476 22K
R493 1.8K
R489 1.8K
R485 1.8K
R481 1.8K
R495 82K
R491 33K
R487 33K
R483 47K
D476 1N4148
R482 3.9K
R486 15K
R490 10K
R494 10K
D478 1N4148
D477 1N4148
R496 39K
C481 2.2uF 50V
R492 100K
C480 2.2uF 50V
R488 47K
C479 2.2uF 50V
R484 47K
C478 2.2uF 50V
Q477 JC547A
C482 22uF\16V
R498 10K
R497 47K
Q478 JC547A
R499 33K
D490 1N4148
R500
R503 1K
R505 1K
R504 100
R506 100
Q498 JC547A
R534 47K
Q499 JC547A
R535 47K
D479 1N4148
D480 1N4148
D481 1N4148
D482 1N4148
R501 22K
Q479 JC547A
R502 330
D483 7.5V
R507 1.2K
R523 1.8K
R527 150K
R524 4.7K
R525 15K
Q482 JC547A
Q481 JC547A
R526 100K
R521 5.6K
C495 0.1uF
C494 220uF 16V
D488 1N4148
R529 3K3
D489 1N4148
R531 3K3
R530 100
R528 100
R522 47K
C401C 100nF
C403C 4.7uF
C402C 22pF
IC401C
R403C 100R
R404C 100R
EM401C 32.768 KHz
R402C 560R
Q401C BC558B
R401C 2K2
BK01 3.6V
R479 12K
R520 10K
R519 1.8K
D487 1N4148
C493 1uF 50V
R518 470
Q480 JC558
R515 47K
R516 1K
R517 1K
D486 3.9V
EM476 8.0MHZ
C491 33pF (CH)
C492 33pF (CH)
L476 47uH
C490 47pF (CH)
C489 47pF (CH)
D486 1N4148
D484 1N4148
C488 0.1uF (M)
C487 0.047uF (M)
R514 10K
R512 10K
D485 1N4148
R513 10K
R511 1.5K
R510 1.6K
R509 1.5K
R508 1.5K
C483 22pF
C484 22pF
C485 22pF
C486 22pF

CHANNEL CIRCUIT


20"/21" MAIN CIRCUIT
CHANNEL CIRCUIT
POWER SUPPLY CIRCUIT
CRT CIRCUIT
DRIVE CIRCUIT
AV CIRCUIT
TELETEXT CIRCUIT
CHANNEL CIRCUIT
CHANNEL CIRCUIT
AV CIRCUIT
DRIVE CIRUIT
IC181
IC251
IC241
IC401
EM401
1 BANDGAP SUPPLY 52
2 IF DECOUPLING SOUND DEMODULATOR 51
3 IF AUDIO O/P 50
4 IDENT TUNER TAKE-OVER ADJUSTMENT 49
5 SIF IN DECOUPLING AGC CAP. 48
6 AUDIO I/P TUNER AGC 47
7 VIDEO OUT IF I/P 2 46
8 DECOUPLING IF I/P 1 45
9 GND 1 AFC. O/P 44
10 VDD VER. O/P 43
11 GND 2 V.GENERATOR 42
12 DECOUPLING FILTER TUNING V. FB I/P 41
13 TV CVBS I/P PHASE 1 LOCK FILTER 40
14 PECKING CONTROL I/P PHASE 2 LOCK FILTER 39
15 EXT CVBS I/P SAND 38
16 AV SW H. O/P 37
17 BRI. START H. OSC 36
18 B O/P 4.43 XTAL 35
19 G O/P 3.58 XTAL 34
20 R O/P BRUST PHASE DETECTOR 33
21 FB 4.43MHZ O/P 32
22 R I/P B-Y O/P 31
23 G I/P R-Y O/P 30
24 B I/P R-Y I/P 29
25 CONT. B-Y I/P 28
26 COL. TINT 27
BDS1
BDS0
VT
IDENT.
VOL.
8V
12V
16V
GND
B O/P
G O/P
R O/P
A1
A2
A3
A4
A5
ABL
TVV-O/P
AVV-I/P
FB
FE
BRI.
CONT.
COL.
AFT
MUTE
TVA-O/P
AVA-I/P
F3
J3
VER.DRIVE
VER. FB
HOR. SYNC
HOR. DRIVE
AGC
H.CENTRE
Q151 BF370
Q161 2SA720
Q162 2SA720
Q163 2SA720
Q181 JC547A
Q676 JC547A
D161 1N4148
D162 1N4148
D163 1N4148
D181 1N4148
D187 1N4148
D241 5.1V
T26
T27
T181
FI181
FI182
FI183
FI326 6.5MHZ
FI327 5.5MHZ
EM151
EM182 4.43MHZ
VR181 10KB
VR182 10KB

F-2OMMON.SCH
TV PROCESSOR

R151–R156,R161–R174,R181–R208
R241–R242,R251–R254
C151–C154,C168–C169,C181–C216
C241–C247,C251–C256
L151– ,L161– ,L181–L185
L251– ,
NIL ,D161–D163,D181–D187
D241– , NIL
Q151– ,Q161–Q163,Q181–Q182
FI181–FI183
EM181–EM182
IC181– ,IC241– ,IC251
VR181–VR182

FTZ

R26–R27
C26–C30
T26–T27

GERMAN STEREO

R901–R906
C901–C910
L901
EM901
IC901

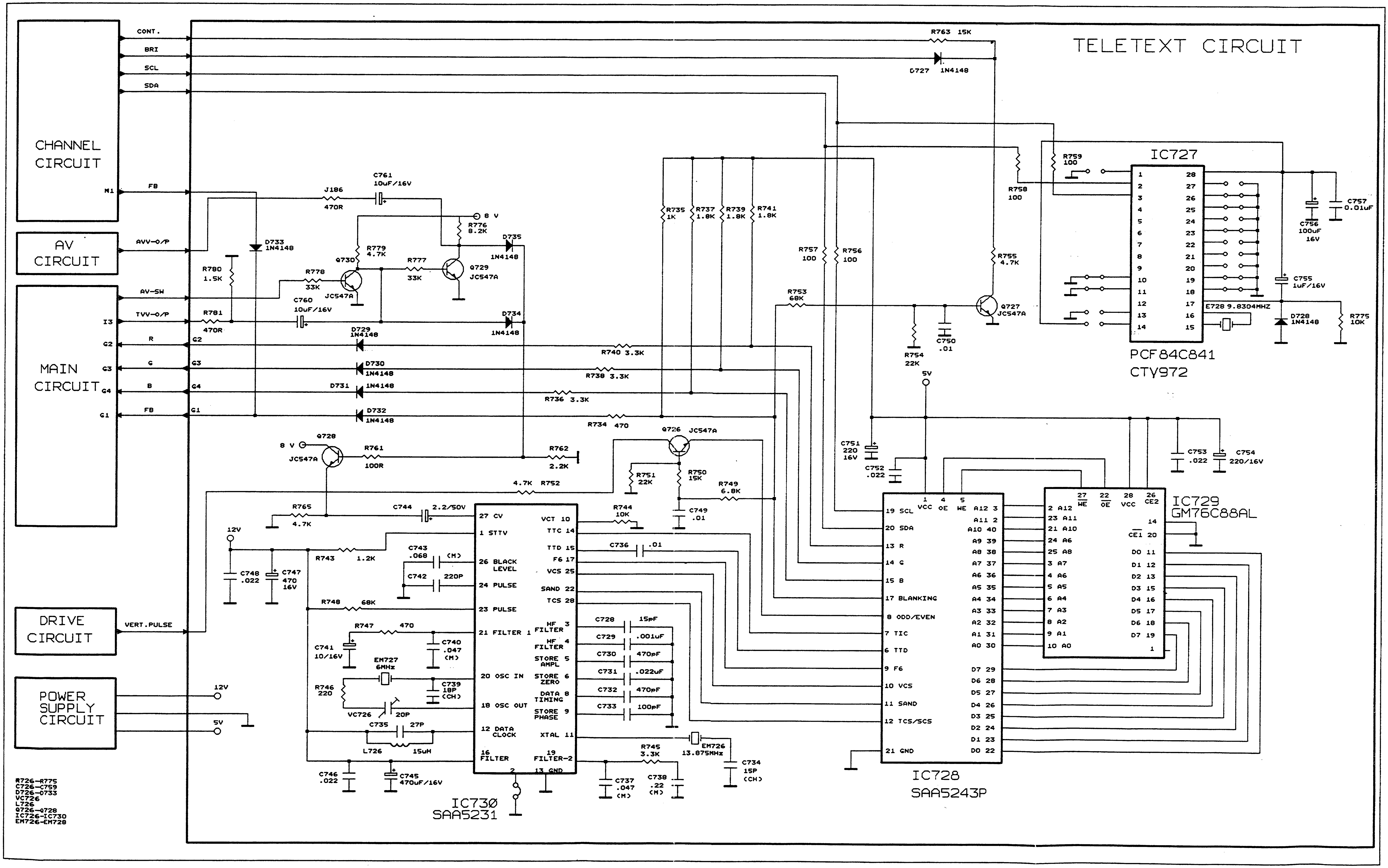
SOUND SYSTEM

R326–R341
C326–C340
L326
T326
FI326–FI334
IC326–IC327
T326
VR326

THE SERVICE INFORMATION FOR SAFETY

1. REPLACMENT OF COMPONENTS MARKED ⚠ MUST BE USED WITH THE SAME TYPE SPECIFIED BY MANUFACTURES.
2. TO MAKE INSULATION RESISTANCE MEASUREMENT BETWEEN POWER SUPPLY AND EXPOSED (ACCESIBLE) METAL PARTS BEFORE RETURNING EQUIPMENT TO THE CUSTOMER TO DETERMINE APPROPRIATE RESISTANCE VALUE SPECIFIED BY MANUFACTURES: 1M OHM/500V DC

MAIN CIRCUIT


TELETEXT CIRCUIT
CHANNEL CIRCUIT
AV CIRCUIT
MAIN CIRCUIT
DRIVE CIRCUIT
POWER SUPPLY CIRCUIT
CONT.
BRI
SCL
SDA
M1
FB
AVV-O/P
AV-SW
TVV-O/P
I3
R
G
B
G1
G2
G3
G4
VERT.PULSE
12V
5V
8 V
R763 15K
D727 1N4148
IC727
PCF84C841
CTY972
R759 100
R758 100
C756 100uF 16V
C757 0.01uF
C755 1uF/16V
E728 9.8304MHZ
D728 1N4148
R775 10K
R735 1K
R737 1.8K
R739 1.8K
R741 1.8K
R757 100
R756 100
R755 4.7K
Q727 JC547A
R753 68K
R754 22K
C750 .01
R740 3.3K
R738 3.3K
R736 3.3K
R734 470
J186 470R
C761 10uF/16V
R776 8.2K
D735 1N4148
D733 1N4148
R779 4.7K
Q730
R777 33K
Q729 JC547A
R780 1.5K
R778 33K
JC547A
C760 10uF/16V
R781 470R
D734 1N4148
D729 1N4148
D730 1N4148
D731 1N4148
D732 1N4148
Q728 JC547A
R761 100R
R762 2.2K
Q726 JC547A
R751 22K
R750 15K
R749 6.8K
C749 .01
C751 220 16V
C752 .022
C753 .022
C754 220/16V
R752 4.7K
R765 4.7K
C744 2.2/50V
R744 10K
C736 .01
R743 1.2K
C748 .022
C747 470 16V
C743 .068 (M)
C742 220P
R748 68K
R747 470
C741 10/16V
C740 .047 (M)
EM727 6MHz
C739 18P (CH)
R746 220
VC726 20P
C735 27P
L726 15uH
C746 .022
C745 470uF/16V
C728 15pF
C729 .001uF
C730 470pF
C731 .022uF
C732 470pF
C733 100pF
R745 3.3K
EM726 13.875MHz
C734 15P (CH)
C737 .047 (M)
C738 .22 (M)
IC730
SAA5231
27 CV
1 STTV
26 BLACK LEVEL
24 PULSE
23 PULSE
21 FILTER 1
20 OSC IN
18 OSC OUT
12 DATA CLOCK
16 FILTER
VCT 10
TTC 14
TTD 15
F6 17
VCS 25
SAND 22
TCS 28
HF FILTER 3
HF FILTER 4
STORE AMPL 5
STORE ZERO 6
DATA TIMING 8
STORE PHASE 9
XTAL 11
19 FILTER-2
2
13 GND
IC728
SAA5243P
1 VCC
4 OE
5 WE
19 SCL
20 SDA
13 R
14 G
15 B
17 BLANKING
8 ODD/EVEN
7 TIC
6 TTD
9 F6
10 VCS
11 SAND
12 TCS/SCS
21 GND
A12 3
A11 2
A10 40
A9 39
A8 38
A7 37
A6 36
A5 35
A4 34
A3 33
A2 32
A1 31
A0 30
D7 29
D6 28
D5 27
D4 26
D3 25
D2 24
D1 23
D0 22
IC729
GM76C88AL
27 WE
22 OE
28 VCC
26 CE2
2 A12
23 A11
21 A10
24 A9
25 A8
3 A7
4 A6
5 A5
6 A4
7 A3
8 A2
9 A1
10 A0
14
CE1 20
D0 11
D1 12
D2 13
D3 15
D4 16
D5 17
D6 18
D7 19
1
R726-R775
C726-C759
D726-D733
VC726
L726
Q726-Q728
IC726-IC730
EM726-EM728

TELETEXT CIRCUIT